EDUCATIONAL ATTAINMENT AMONG HIGH-RISK TEENAGE MOTHERS

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Decreased educational attainment has been associated with numerous factors such as teenage pregnancy, repeat pregnancy, risky sexual behavior, substance use, depression, and parental distress. Educational attainment was examined among a group of predominantly Mexican American teenage mothers who were considered at high risk to have a repeat pregnancy, contract sexually transmitted diseases (STDs), and use substances. Project Success Longitudinal Study is part of a national study funded by the Center for Substance Abuse Prevention. Participants were recruited from eight traditional high schools in a large South Texas school district, an area with a high rate of teenage pregnancy and substance use. The treatment intervention included a multidimensional curriculum that was implemented in the participants' high schools in addition to home- and school-based case management services. It was hypothesized that participants who received the intervention would be more likely to attain their high school degree or equivalent and that amount of treatment received would be associated with educational attainment. Additionally, it was hypothesized that profiles of participants who attained their high school degree or equivalent would differ in the areas of parental distress, social support, symptoms of depression, and substance use when compared to participants who did not attain their high school degree or equivalent. Results indicated that participants who received the intervention reported increased educational attainment during the first two years of the study. Additionally, all participants experienced positive changes on various psychosocial measures.

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CHAPTER I

INTRODUCTION

Examining educational attainment among teenagers and young adults is a difficult task due to the numerous issues such as sexual behavior, pregnancy, social support, substance use, and demographic variables that can help or hinder motivation and opportunity to get an education. Sexual activity, especially when it results in an unwanted pregnancy, can lead to a decrease in the motivation to and the prospects of finishing high school, let alone attending college (Berry, Shillington, Peak & Hohman, 2000). Teenagers and young adults who are parenting often do not have the support or understanding from others to enable them to continue with their education. In addition, substance use is often associated with a decrease in school attendance or academic success, which in turn leads to lower educational attainment. Continuing to complicate the convoluted findings regarding educational attainment are demographic variables such as race, ethnicity, and socioeconomic status (SES), as educational disparities exist between different race and ethnic groups (Berry et al.).

Continued research is needed to examine what types of qualities contribute to teenage mothers earning a degree and what qualities or challenges make earning a degree less likely. Currently, it is incredibly difficult to understand whether race or ethnicity and SES by themselves impact educational attainment (Berry et al., 2000). Academic progress, ethnicity, and SES have all been linked to substance use, which may be a unique precursor for decreased educational attainment (Fortenberry, Costa, Jessor, & Donovan, 1997). Additionally, substance use may lead to unprotected sex

and pregnancy, impacting educational attainment. In reality, all of these variables are likely to be intricately interconnected and contributing to each other.

The current study is focused on Mexican Americans' educational attainment for several reasons. In general, attaining a high school degree makes finding a job, earning a higher salary, and establishing independence from family or government assistance more attainable. However, Mexican Americans are less likely than other minorities and the majority group to attain a high school degree (Berry et al., 2000). Finally, Mexican American women have high rates of teenage pregnancy. These statistics emphasize the need for research with Mexican American teenage mothers regarding their attainment of a high school education. The sections that follow review the literature on Hispanic Americans with a focus on Mexican Americans. Education, substance use, and teenage pregnancy are examined in order to provide a detailed picture of how these concepts are intertwined. Previous studies in the area of teenage pregnancy in regards to education are also reviewed to provide background information supporting the study's intervention.

Hispanic Americans

Hispanic Americans are now the largest minority group in the United States (U.S. Census Bureau, 2001). The number of Hispanics increased 54% from 1990 to 2000, making them the fastest growing ethnic group in the country (Population Estimates Program, 2000). Furthermore, while only 29% of non-Hispanic White Americans were under the age of 25, almost half (i.e., 48%) of all Hispanic Americans were under the age of 25 (U.S. Census Bureau, 2001) creating a substantial discrepancy in the teenage

and young adult population when compared to the distribution of age among other cultural groups.

As the Hispanic population grows, its impact on the U.S. increases, making what were once Hispanic issues into national issues. Thus, the social, economic, and physical well being of Hispanics is increasingly important to the well being of the entire population. It follows, then, that mental health issues affecting the Hispanic population merit increased attention.

The distribution of Hispanics in this country is comprised primarily of persons who originated from Mexico, Puerto Rico, or Cuba (De la Garza, DeSipio, Garcia, Garcia, & Falcon, 1992). Of the three primary subgroups, Mexican Americans[1] make up the largest faction. The U.S. Census Bureau (2001) found that 66% of Hispanic Americans are of Mexican origin. Although there are many similarities among Hispanic subgroups, Mexican Americans differ somewhat from other Hispanic subgroups, specifically in their educational attainment.

Educational Attainment of Hispanics

According to the Census Bureau's report (Stoops, 2004), Hispanics still have the lowest level of educational attainment among all race and ethnic groups. Although the rates for Hispanics over 25 years of age receiving a high school diploma increased over the last decade (57% in 2003 compared to 53% in 1993), they are much less likely than Non-Hispanic Whites, African Americans, and Asians to finish high school. Table 1

[1] The term Mexican American is often used interchangeably in the literature with other terms such as Chicano, Latino, and Hispanic. The various terms are used more often in certain areas of the U.S. than others and are often a personal preference among individuals. The current author will use the term Hispanic when referring to the collection of Hispanic subgroups and Mexican American when referring to Hispanics of Mexican decent unless citing past literature that used another term.

displays percentages of educational attainment by race, ethnicity, and age (Stoops, 2004).

Table 1

Educational Attainment by Race, Ethnicity, and Age

Ages 25-29	High school graduate or more	Some college or more	Bachelor's degree or more
Non-Hispanic White	93.7	65.5	34.2
Black	87.6	50.2	17.2
Asian	97.1	81.2	61.6
Hispanic (of any race)	61.7	31.1	10.0

When examining educational attainment, grouping all subgroups of Hispanics together is misleading. When compared to other Hispanic subgroups, about half of Mexican Americans graduate from high school or get a GED, but far fewer (i.e., less than 10%) pursue post-secondary education (De la Garza et al., 1992). In contrast, the high school graduation rate for Cuban Americans stands at almost 70%, and the college graduation rate is about 25%, which is similar to the American population as a whole (U.S. Department of Health and Human Services, 2001).

Educational attainment rates of teenagers who are mothers are even more discouraging than are the ethnic differences in degree attainment. According to Griffin (1998), only about 60% of women who drop out of school because of pregnancy obtain their high school diploma or equivalency by the age of 29. Frisbie, Forbes, and Hummer (1998) compared pregnancy outcomes among Non-Hispanic Whites (of all ages) and several subgroups of Hispanics (of all ages) using a large national dataset.

They found that Mexican American mothers are much less likely than mothers in other Hispanic subgroups to obtain an education. Table 2 displays Frisbie et al.'s findings on educational attainment of Hispanic and Non-Hispanic Whites.

Table 2

Educational Attainment of Mothers by Hispanic Subgroups and Non-Hispanic Whites

	Percentage of participants obtaining an education		
Hispanic subgroup	Less than 9 years	9-11 years	12 or more years
Non-Hispanic White[1]	2.25	12.87	84.88
Mexican American	33.12	28.31	38.56
Puerto Rican	8.70	33.99	57.31
Cuban	3.67	13.27	83.06
Central/South American	25.42	18.60	55.98
Other Hispanic	7.44	27.35	65.20

Note. From the National Center for Health Statistics Linked Birth/Infant Death for 1989, 1990, and 1991
[1]20% sample of Non-Hispanic Whites weighted for this analysis.

Substance Use Related to Education

Teenagers also have high rates of substance use, which likely affects educational attainment. According to the results of a 1999 survey (MacKay et al., 2000), approximately one-third of teenagers had smoked or were currently smoking cigarettes. From this same population of smokers, about half had tried or were currently using alcohol at the time of the survey. In addition, about half of the teenagers in this sample had tried marijuana (MacKay et al.). Although sexual activity, contraception use, pregnancy rates, and substance use vary among race and ethnic groups, these potentially harmful activities have been connected to decreased educational attainment, among other social and emotional consequences.

Substance use seems to be strongly related to lower educational attainment; however, most information found on substance use and school dropouts is from school-based surveys and hence, does not include school dropouts' rates of substance use (Swaim, Beauvais, Chavez, & Oetting, 1997). Thus, substance use may have a stronger effect on lower educational attainment than we realize. Swaim et al. surmised that interventions targeting educational attainment and substance use should intervene in many areas, focusing not only on keeping students in school, but also on enhancing the school environment, identifying barriers that make school difficult (e.g., learning disabilities) as well as identifying social barriers (e.g., physical health problems, financial problems, etc.).

Some researchers believe that the relationship between educational attainment and substance use is mediated by expectancies (McCarthy, Aarons, & Brown, 2002). McCarthy et al. surmised that there is likely a highly complex association between educational attainment and substance use. Lower educational attainment may lead to increased substance use, but the opposite may also be true; substance use may lead to less education. McCarthy et al. found that lower educational attainment was associated with alcohol use and alcohol expectancies, which included perceived positive reinforcements such as sexual appeal, social assertiveness and pleasure, and relaxation among young adults. Because alcohol expectancies seem to play a role in both alcohol use and educational attainment, it may be that education lessens the perceived positive reinforcements for alcohol use and emphasizes different reinforcements that often go along with educational attainment such as increased salary and job opportunity.

Teenage Pregnancy

Substantial barriers to attaining a high school education include risky sexual behavior and teenage pregnancy. Consequences to risky sexual behavior such as sexually transmitted diseases and unplanned pregnancies can impact high school attendance, academic motivation, and a readjustment of financial priorities (e.g., getting a job to financial provide for a child). Therefore, examining teenage sexual behavior, including pregnancy and repeat pregnancy seems imperative in order to best understand barriers to educational attainment.

Sexual behavior among teens has been a major concern in the U.S. due to high teenage pregnancy rates over the last two decades. Thirteen percent of births in the U.S. are by teens (MacKay et al., 2000), and almost half of females between the ages of 15 and 19 have had sexual intercourse (MacKay et al.). Among sexually active teenage girls, approximately three-fourths of them did not use some method of contraception during the first time they had sex (Abma, Martinez, Mosher, & Dawson, 2004), which may explain in part why about 78% of teenage pregnancies are unintentional (MacKay et al.). In addition to unplanned pregnancy, teenagers are at high risk for sexually transmitted diseases (STDs). Compared to adults, sexually active teenagers are more likely to have multiple partners, hence putting themselves at risk for sexually transmitted diseases (MacKay et al.).

Teenage pregnancy is a problem in the U.S. despite teenagers receiving instruction on sex and contraception use (Yampolskaya, Brown, & Vargo, 2004). Approximately 86% of teenage girls receive some form of education instructing them on how to refuse sex, with most of this education occurring before they enter high school.

In addition, about half of teenage girls talk with a parent about contraception. When asked about feelings related to a potential, unexpected, teenage pregnancy, the vast majority of teenage girls reported that they would be upset about the pregnancy (Abma et al., 2004). Table 3 displays percentages by race and/or ethnic group on sexual education issues and feelings about a teenage pregnancy. Despite instruction on saying no to sex, discussions about contraception and perceptions of unhappiness about the unexpected pregnancy, teenage pregnancies are not uncommon. Additionally, many teenagers who become pregnant have subsequent unexpected pregnancies, leading researchers to believe that the existing interventions are not highly effective (Yampolskaya et al.).

Table 3

Rates of Sexual Education Issues and Feelings about Potential Pregnancy

	Race and/or Ethnic Group			
	Hispanic	White (non-Hispanic)	African American	Total females
Did not receive formal instruction on refusing sex	18.6	13.2	15.6	14.5
Did not receive formal instruction on contraceptive use	35.4	27.8	35.8	30.1
Feelings about an unexpected pregnancy[1]				
Upset*	75.4	90.0	83.0	86.9
Pleased**	24.7	9.3	16.7	12.7

Note. Adapted from Abma et al., 2004.
[1] Rates are shown as percentages. Percents may not add to 100 because responses of "would not care" are not included.
*Indicates teens who rated an unexpected pregnancy as either "very upset" or "a little upset".
**Indicates teens who rated an unexpected pregnancy as either "a little pleased" or "very pleased".

Teenage Pregnancy among Hispanics

Considering teenage pregnancy is seen as a barrier to educational attainment, the high teenage pregnancy rates among the Mexican American population is of particular concern. Although rates of teenage pregnancy in the United States and specifically in Texas have decreased over the past decade (down 30% and 18% respectively), teenage pregnancy among Hispanics has declined much less when compared to other groups. Table 4 displays birthrates in 1991, 2000, and 2004 and the percentage of change in births to teenagers in the United States between 1991 and 2004 by age, race, and ethnicity (Abma et al., 2004; Center for Disease Control [CDC], 2003; CDC, 2006; Martin, Hamilton, Sutton, Ventura, Menacker, & Munson, 2003; Menacker, Martin, MacDorman, & Ventura, 2004). Among teenage pregnancies in Texas, rates among Hispanics have declined only 11% between 1992 and 2000 while African American and Non-Hispanic Whites rates have declined at a higher pace (32% between 1992 and 2000 and 17% between 1996 and 2000 respectively; The National Campaign to Prevent Teen Pregnancy, retrieved on March 14, 2005).

Table 4

Birth Rates by Age, Race, and Ethnicity

Age, race, and ethnicity of teenage mother	Birthrate in 1991	Birthrate in 2000	Percent decline in United States birth rate from 1991-2000	Birthrate in 2004	Percent decline in U.S. birth rate from 1991-2004
Ages 10-14					
All races[1]	1.4	.9	50	.7	50
Non-Hispanic White	.5	.3	60	.2	60
Non-Hispanic Black	4.9	2.4	61	1.6	67
American Indian[2]	1.6	1.1	44	.9	44

(table continues)

Table 4 *(continued)*.

Age, race, and ethnicity of teenage mother	Birthrate in 1991	Birthrate in 2000	Percent decline in United States birth rate from 1991-2000	Birthrate in 2004	Percent decline in U.S. birth rate from 1991-2004
Ages 10-14					
Asian or Pacific Islander[2]	.8	.3	63	.2	75
Hispanic[3]	2.4	1.7	42	1.3	46
Ages 15-17					
All races[1]	38.6	26.9	40	22.1	43
Non-Hispanic White	23.6	15.8	44	12	49
Non-Hispanic Black	86.1	50.1	52	36.8	57
American Indian[2]	51.9	--	41	30.1	42
Asian or Pacific Islander[2]	16.3	--	45	8.9	45
Hispanic[3]	69.2	55.5	27	49.7	28
Ages 18-19					
All races[1]	94	78.1	23	70	26
Non-Hispanic White	70.6	57.5	26	48.8	31
Non-Hispanic Black	162.2	121.9	32	103.3	36
American Indian[2]	134.2	--	34	86.8	35
Asian or Pacific Islander[2]	42.2	--	25	29.9	29
Hispanic[3]	155.5	132.6	14	133.4	14

Rates per 1,000 women.
[1]Includes other races in addition to White and Black
[2]Race and Hispanic origin are reported separately on the birth certificate. Data for persons of Hispanic origin are included in the data for each race group according to the mother's reported race.
[3]Includes all persons of Hispanic origin of any race. -- indicate rates were not available.

Grounds for the discrepancies between Hispanic teenage pregnancy and other groups are unclear. The National Center for Health Statistics (NCHS; 2006) identified

teenagers between the age of 15 and 19 years have only slightly increased their use of contraception from 1995 to 2002. When contraceptive use is separated by race, it appears that White teenagers have recently increased their use; however, Hispanics and African Americans have used contraception less than they reported in 1995. Teenagers contraceptive use rates are displayed in Figure 1.

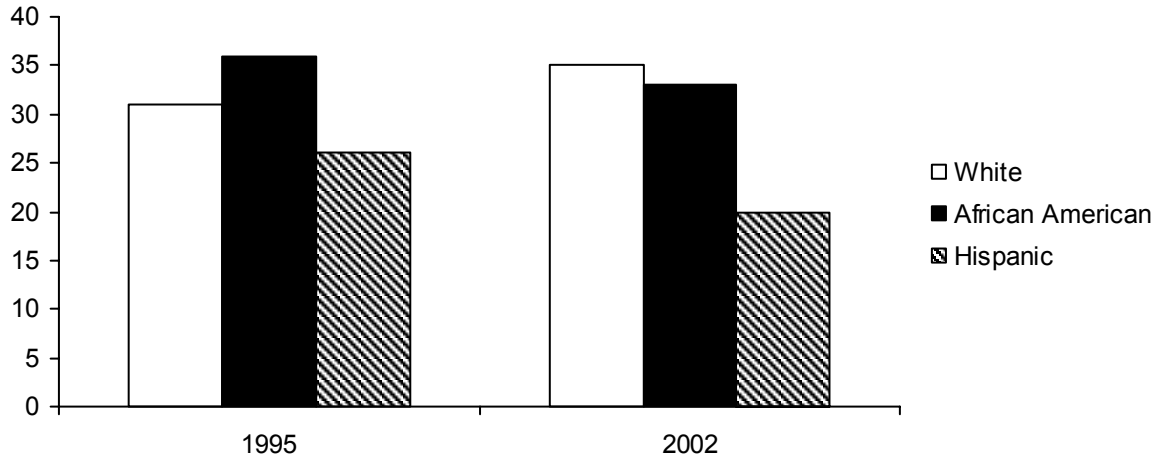

Figure 1. Contraception use among 15 to 19 year olds by race.

Note. Figure based on data from NCHS (2006), Table 17, Page 155.

Cultural factors such as acculturation are likely impacting the high teenage pregnancy rates among the Hispanic community. Studies have examined mother's level of acculturation as a contributor to attitudes towards pregnancy, birth control use, abortion rates, and motherhood. Zambrana, Scrimshaw, Collins, and Dunkel-Schetter (1997) found that Mexican immigrants who reported low levels of acculturation had more positive attitudes toward their pregnancies when compared to more acculturated Mexican Americans. Additionally, Unger and Molina (2000) found that low acculturation mothers reported increased benefits from pregnancy and motherhood, specifically that being a mother magnified their perceived importance in the family and increased

positive emotions (e.g., love, loyalty) received from family and others. Interestingly, the study also found that women who reported low acculturation perceived themselves as having high intention and self-efficacy regarding birth control use as well as strong social support for birth control use; however, they often endorsed the idea that women should have as many children as possible.

Contradictory evidence has also been found regarding differences between race/ethnic groups and their desire for pregnancy. Although Rubin and East (1999) reported that Hispanic teenagers, when compared to other groups, were more likely to want a child and subsequently to become pregnant, Smith, McGill, and Wait (1987) did not find differences among race/ethnic groups in their desire for pregnancy. Neither study appeared to examine acculturation as a potential moderating variable, which may account for the contradictory results. When examining abortion discrepancies, Kaplan, Erickson, Stewart, and Crane (2001) found that acculturation was not associated with abortion rates among Mexican Americans. However, women who held less traditional views of women's familial roles reported significantly more abortion rates when surveyed when compared to women who held more traditional gender roles (Kaplan et al.).

The range of findings regarding culture is likely affected by the numerous ways that researchers operationally define acculturation, culture, gender roles, and other constructs often included in research among minority groups. Despite these mixed findings, aspects of culture, whether these be acculturation, perceptions about motherhood, or other cultural implications appear to contribute to the discrepancy

between Hispanic teenage pregnancy rates and rates of other populations, ultimately impacting educational attainment among the Hispanic population.

Repeat Pregnancy

Repeat pregnancy is an additional complexity adding to pregnancy rates and educational attainment. According to The National Campaign to Prevent Teen Pregnancy (Klerman, 2004), between 22 to 30% of teenage mothers experience a repeat pregnancy within two years of their initial teenage pregnancy. Additionally, studies indicate that Hispanics may be more likely to have a repeat pregnancy sooner than White teenage mothers (Klerman). Finally, repeat pregnancy decreases the likelihood that a teenage mother will complete her high school degree or equivalency, subsequently increasing the risk of their child following the pattern of not earning a high school degree (Klerman).

Coard, Nitz, and Felice (2000) found that 34% of their adolescent sample had a repeat pregnancy within two years of the birth of their first child. They also found that repeat pregnancy was associated with contraception use; specifically, participants were most likely to experience a repeat pregnancy if using condoms (46% in year one and 67% in year two) compared to other types of contraception. Although education level and enrollment were examined in their study, they were not found to be significantly associated with repeat pregnancy. According to the researchers, this finding is potentially due to the little variability in school status among their participants (Coard et al.).

Several researchers who examine repeat pregnancy include decreased educational attainment as a potential consequence to the pregnancy (Coard et al.,

2000; Kershaw, Niccolai, Ickovics, Lewis, Meade, & Ethier, 2003; Stevens-Simon, Kelly, & Kulick, 2001). However, repeat pregnancy is usually associated with decreased contraception use, decreased choices of types of contraception, and decreased consistency of contraception use. Stevens-Simon et al. found that repeat pregnancy was associated with contraception choices, school enrollment, and school progress. However, they found that participants who enrolled in school after having their first child had fewer risk factors and when statistically controlled, eliminated the effect of education. Previous research has indicated that school attendance is a potential risk factor in repeat pregnancy (as cited in Jacoby, Gerenflo, Black, Wunderlich, & Eyler, 1999) and was included in the current study.

Impact of Cultural Values on Education

In order to examine educational attainment among Mexican Americans thoroughly, reasons for their high school and college graduation rates must be investigated. Although decreased educational attainment has been associated with pregnancy as well as substance use, the cultural value on education may contribute to these differences.

It is difficult to decipher true cultural values on education held by Mexican Americans as distinct from ideals as well as cultural myths presented by the racial majority group. Mexican Americans, similar to many minority groups, have struggled to acclimate to and accept American norms while preserving their Mexican heritage throughout the 20th century. The history of education among Mexican Americans has had a strong impact on their retention of their traditional cultural values. For example, in the 1920s, Mexican Americans were immersed in the American educational system and

were often criticized for and prevented from speaking Spanish (Ruiz, 2000). They were often taught only about American history and from an Anglo perspective. In addition, women often wanted to attend college and/or focused on clerical skills; however, they were rarely given these positions and opportunities (Ruiz). Women often rebelled from their traditional norms during this time period and moved out of their family home, dated similar to their White peers (e.g., without chaperones), or married at 15 or 16. It was common for women involved in the Mexican American Movement to view education as the solution to social mobility (Ruiz); however, they were presented with several barriers.

In summary, Mexican Americans during this time period were immersed in a foreign system and forced to abandon their language and history while in school. They were then taught certain skills but were rarely given employment in order to use those skills. These patterns and inconsistencies throughout the 20th century have likely impacted Mexican Americans' current views regarding educational attainment, specifically the importance of an education and the opportunities that an education may or may not provide them.

In order to examine the influence of culture on educational attainment, the U.S. media must be included as it is the primary way society is exposed to a variety of topics, issues, and "representatives" of minority groups. However, the media's portrayal of Mexicans and Mexican Americans has been very limited and misleading. With Mexican Americans often portrayed in the past as maids and villains who stereotypically are uneducated, it has only been recently that there have been more accurate examples of the Mexican American culture in the media (Mayer, 2003). Two short films titled

Barbacoa and *Corpus* as well as the *George Lopez* television show have provided some of the most accurate representations of Mexican Americans to date. In general, they focus on a family ideology based on community involvement, love, support, and unity (Mayer). This, in part, contradicts much of the past research that has portrayed Mexican American families as being overly organized, having submissive women, and stifling independence and individuality (Mayer). However, sometimes these representations include patriarchy, criticism, and reunification, which support some stereotyped Hispanic values along with strong family ties (Mayer). Overall, the U.S. media has facilitated many myths regarding Mexican Americans that may or may not have some basis of truth. The U.S. media's long history of portraying Mexican Americans as seemingly uneducated (e.g., maids and villains) and few examples of Mexican Americans as professionals such as doctors, lawyers, and psychologists likely has an indirect impact on the way Mexican Americans as well as the general public view the importance of educational attainment.

Potentially influenced by the U.S. media, many cultural values and stereotypes are associated with Mexican immigrants and Mexican Americans, including stereotypes about the importance of educational attainment. Unger and Molina (2000) found that people from Mexican descent are often viewed as family oriented, religious, and academically unmotivated. Additionally, some researchers believe that many of the negative and positive stereotypes not only have been accepted by Non-Hispanics, but also have been internalized by Mexican Americans. In a study by Mindiola, Rodriguez, and Neumann (1996), U.S. born Chicano respondents described fellow Chicanos not only as hard-working, family oriented, and friendly, but also as uneducated (Niemann,

2001). Additionally, the media and government officials have also perpetuated educational myths associated with Mexican Americans (Valencia & Black, 2002). Understanding these myths regarding education is complex. Recent statistics show that Mexican Americans are indeed less educated when compared to other Hispanic and non-Hispanic groups. This disparity in education rates contributes to the myth that Mexican Americans do not value education. However, this disproportion is more likely caused by unequal opportunities, language barriers, and poverty rather than the perception that education is unimportant to this group (Young, Turner, Denny, & Young, 2004).

Mexican Americans appear to be confronting myths and stereotypes regarding how they view the importance of attaining an education. According to Valencia and Black (2002), Mexican Americans have worked hard through litigation, advocacy organizations, individual activists, political demonstrations, and legislation to advance Mexican Americans' educational opportunities and equalize their educational attainment when compared to other Hispanic subgroups and the majority group (i.e., White Americans). Valencia and Black also found that Mexican American parents value education for their children, which refutes one of the many myths associated with Mexican Americans. Therefore, it is possible that the expressed value of education gets lost among the many other needs of Mexican Americans. For example, Hispanics are more likely to live around or below the poverty level, similar to other minority groups when compared to Whites, leading to immediate concerns of food, clothing, and shelter (South, Crowder, & Chavez, 2005). In addition, Hispanics are much less likely than all other groups to have health insurance; about 33% of Hispanics do not have health

insurance versus 20% of African Americans, 19% of Asians, and 11% of Whites (Census Bureau, 2001). Secondary worries, such as mental health care and education, may not be as easily recognized in Mexican Americans by those outside of this minority group, but they are nevertheless priorities to many Mexican Americans as well as people in other minority groups.

Although examining the impact of cultural values on educational attainment is a highly complex task, it should not be overlooked. Mexican American views about educational attainment were likely impacted historically by the way Mexican Americans were inserted into the educational system during the 20th century. In addition, the U.S. media plays an ongoing role in indirectly influencing the perceived importance of educational attainment by representing Mexican American characters as predominantly uneducated as well as not including Mexican Americans in educated roles in the popular media.

Previous Interventions

Researchers often examine educational attainment among teenage mothers in the context of pregnancy prevention interventions due to the seemingly reciprocal nature of education and pregnancy prevention. Additionally, interventions targeting teenage pregnancy and educational attainment often include substance use, repeat pregnancy, risky sexual behaviors, and psychosocial factors as secondary variables. Finally, interventions have been based on a variety of theoretical backgrounds and have included a variety of settings. Some programs have focused on a school intervention (Harris & Franklin, 2003); others have attempted to intervene through a participant's home environment and neighborhood (Solomon & Liefeld, 1998), while others have

focused on a community program intervention model (Horwitz et al., 1991; Stein, Nyamathi, & Kington, 1997). Still other interventions have attempted to combine models and intervene through more than one environment (Griffin, 1998; McMahon, Browning, & Rose-Colley, 2001).

Previous interventions have mainly emphasized Cognitive-Behavioral theory, focusing on self-efficacy, resiliency, and social support. The theoretical backgrounds used to support the current research have included social learning theory, relational theory, and risk-resiliency. Researchers in the current study examined the effect of one such intervention in comparison to an adequate control group, the absence of which has been a limitation in many other studies of this nature. Researchers in the current study also examined the connection between educational attainment and teenage pregnancy, substance use, and numerous psychosocial constructs. In addition, researchers in the current study included both school- and home-based interventions in order to maximize the impact of the multidimensional intervention.

Current Study

The relationship between educational attainment and repeat pregnancy, substance use, and socioemotional conditions is multifaceted, involving various aspects of a person's life and environment. In addition, examining this relationship in regards to a particular ethnic group is even more complex due to the potential distinctions within ethnic/racial groups. Although research on Mexican Americans has increased greatly over the last decade, many areas in the literature have been neglected. The importance of examining Mexican American educational attainment in relation to teenage pregnancy and associated issues should not be overlooked. Although some

researchers have focused their efforts on this topic, advancements must continue in order to get a better picture of why some teenage Mexican American mothers continue their education and others do not. The current study used this premise as its focus.

Data Source

Data used for the current study were collected by the University of Texas Health Science Center in San Antonio, Texas as part of two grants funded by the Center for Substance Abuse Prevention. The longitudinal grants were titled Project Success and Project Success Longitudinal (PS Long) and are discussed in further detail in the Method section of this manuscript.

When Project Success was funded in 1998, very few studies that examined school-based interventions designed to decrease substance use, risky sexual behaviors, and repeat pregnancy included an adequate control group (PS Long Annual Report, 2002). At that time, the Project Success researchers wanted to examine the effects of a multidimensional intervention for teen mothers and compare the effect of their intervention to the "standard of care" teen mothers were receiving from their high schools. Although some intervention studies in this area of the literature did include a control group (Harris & Franklin, 2003; Soloman & Liefeld, 1998), their control groups, as well as their intervention groups, consisted of a much smaller number of participants than the groups in the current study. Although other studies have shown promising results, a large scale study with a multidimensional intervention and an adequate control group was needed to further the knowledge in the realm of teenage pregnancy, substance use, and educational attainment.

Statement of the Problem

Educational attainment is strongly associated with risky sexual behavior, substance use, teenage pregnancy, and poverty rates. Substance use, teenage pregnancy, and educational attainment need to be a priority in social science research in order to facilitate healthier and more successful behavior for youth in the U.S.

Little research has been done comparing high school students who drop out and eventually receive their degree or equivalency (i.e., GED) and dropouts who do not. Even less research has been done comparing the effect of an intervention to aid in psychosocial difficulties (e.g., symptoms of depression, parental distress, and substance use) using participants with different educational attainment (e.g., drop-outs who receive and do not receive a degree). The impact of the intervention, as well as the interaction between demographics, psychosocial factors, and the intervention, is currently unknown, especially among Mexican American teenage mothers.

Previous findings have been unclear regarding the effect of interventions for teenage substance use and risky behavior due to the lack of an adequate control group and the lack of a combination of pregnancy prevention and substance use prevention interventions. In addition, most programs designed to intervene in pregnancy and in substance use are targeted to both males and females. This dual-gender method assumes that interventions have the same effect on both men and women, when this is not necessarily the case.

Hypotheses and Research Question

Project Success and PS Long researchers' main hypotheses focused on decreasing repeat pregnancy, risky sexual behavior, and substance use among

teenage mothers through a multidimensional intervention implemented through the high school curriculum and home- and school-based case management. The current study focused on the specific impact of Project Success' and PS Long's multidimensional intervention on participants' educational attainment while considering the associated factors included in Project Success' and PS Long's hypotheses (i.e., repeat pregnancy, risky sexual behavior, and substance use). The researcher conducting the current study proposed the following hypotheses.

Hypothesis 1. The treatment group would have higher educational attainment than the control group at each data collection point.

Hypothesis 2. Educational attainment at each data collection point would be positively associated with the amount of treatment the participants received throughout the study up until that data collection point.

Hypothesis 3. Concurrent mental health variables (e.g., educational expectations, parental distress, symptoms of depression, peer social support, and adult social support) at each data collection point would be associated with the amount of services received from case managers and curriculum throughout the study up until that data collection point.

Hypothesis 4. Concurrent mental health variables (e.g., educational expectations, parental distress, symptoms of depression, and social support) and the amount of treatment received would impact the amount of educational change as well as continued dosage.

Research Question. Profiles of participants who attained and who did not attain their high school degree or equivalent were compared, with a focus on symptoms of

depression, parental distress, social support, and other environmental, physical, and socioemotional factors at each data collection point.

CHAPTER II

METHOD

Project Success and PS Long

The Division of Community Pediatrics of the University of Texas Health Science Center, Pediatrics Division in San Antonio, Texas (UTHSCSA) was funded by the Center for Substance Abuse Prevention (CSAP) to facilitate a longitudinal study examining substance use, repeat pregnancy, educational attainment, and psychosocial factors among pregnant and/or parenting adolescents. The original study, titled Project Success, was funded in October 1998 and ran through January 2002. Project Success Longitudinal Study (PS Long) was funded by CSAP as a continuation of Project Success and ran through September 2005. For the current analyses, all of the participants involved in Project Success and PS Long were utilized.

Participants

Sampling

Female participants were recruited to participate in Project Success from eight traditional high schools located in a large, South Texas school district between 1999 and 2000. This sample was chosen, in part, due to the high percentage of Mexican Americans in this area. At the time of recruitment, female participants were eligible to partake in the study if they met all of the following conditions: a) they were pregnant or parenting, b) they were between the ages of 14 and 18, and c) they were eligible for or currently receiving public assistance such as Temporary Assistance to Needy Families, food stamps, or free school lunches.

By the end of the recruitment phase of Project Success, 302 pregnant and/or parenting adolescents were enrolled in the study, mostly self-reported Hispanics. At the conclusion of Project Success three years later, 256 participants were still participating in the study. Of the 256 participants who were then recruited, 229 Project Success participants enrolled in PS Long.

In order to administer the intervention included in Project Success, the eight high schools were stratified by ethnicity and income and then randomly assigned by school to a treatment condition. Three high schools were assigned to the control group; the participants attending these schools would receive the "standard of care" already established on each campus. The other five high schools were assigned as the treatment schools, and their participants received multidimensional curriculum and case management services.

During the second year of Project Success, a case management only treatment group (CM) was added in the five treatment schools; these participants were enrolled subsequent to the administration of the curriculum and only received case management services. This group was added due to unexpectedly slow enrollment at the beginning of Project Success. The case management services given to the CM group were the same services given to the case management and curriculum group (CM&C). The primary methodological difference between the two treatment groups was that the curriculum was offered in the latter group.

Among the 302 participants enrolled in Project Success, 111 participants were included in the CM&C group, 63 participants were included in the CM group, and 128 were included in the control group. Out of the original 302 participants in Project

Success, 229 enrolled and were included in PS Long. Among the 229 participants that enrolled in PS Long, 78 were included in the CM&C group, 49 were included in the CM group, and 103 were included in the control group. All participants retained their treatment group status from Project Success to PS Long.

Attrition

Researchers' goal was to keep survey attrition under 10% in between each data collection point, hence retaining at least 20% of participants after eight follow up surveys. The UTHSCSA surveyors continuously updated tracking forms, sent birthday mail-outs, and built rapport with participants in order to maintain low attrition rates. Attrition between each data collection point remained reasonable for a longitudinal study, generally staying below 10%. Table A.1 displays attrition rates for each treatment group at each survey data collection point. After four years, 44% of the original participants who took the baseline survey remained in the study, well surpassing researchers' goal of retaining at least 20% of participants.

Although the control group and CM&C group had similar attrition rates, the CM group had the highest attrition rates (PS Long Annual Report, 2002). Researchers surmise that this is likely due to the timing of the data collection points rather than an inherent difference in group characteristics or treatment. The majority of participants in the CM group were scheduled to take their 6- and 18-month surveys in the summer. Surveyors found that participants were more likely to cancel or reschedule appointments during summer months due to work or vacation when compared to data collection points during the school year.

Intervention

The participants in the three high schools assigned to the control group received the "standard of care" already established on each campus. The participants in the other five high schools assigned as the treatment schools received either multidimensional curriculum and case management services (CM&C group) or case management services only (CM group).

Treatment participants in PS Long continued to receive case management services despite their treatment group and despite their school enrollment status. Control group participants in PS Long continued to receive the "standard of care" offered in the community or schools only if they were still enrolled.

Survey Administration

Surveys were administered to all participants by surveyors employed at the UTHSCSA, Division of Pediatrics. Surveys were administered approximately every six months. Participants were required to take the subsequent surveys based on the date of the baseline survey with a window of three months for the survey to be considered valid; one month prior to the six-month increment and two months after the six-month increment. Surveys varied in length during the different waves of the studies and generally took between 40 and 90 minutes to administer. During Project Success, most of the baseline surveys were conducted in a group setting at the participants' high school. However, subsequent surveys were commonly completed individually at the participants' home, school, or other location. All surveys were kept confidential and only included participants' identification number, not their names. Surveys were usually administered in English, but occasionally Spanish surveys were administered

depending upon the level of understanding and comfort with the English language among participants. Participants were able to take a maximum of nine surveys, depending on when they enrolled in the study (i.e., Baseline, 6-month, 12-month, 18-month, 24-month, 30-month, 36-month, 42-month, and 48-month). Not all participants were able to take all nine surveys due to varying enrollment and participant availability during the survey administration window (i.e., 5-7 months after the previous survey). The number of participants who took surveys at each data collection point are displayed in Table A.1. Survey data at each of the nine data collection points were used in the current study.

Participants received monetary incentives to participate in the longitudinal study. They were given gift certificates in the amount of $15 to complete the baseline and six-month survey, $20 gift certificates for subsequent surveys in Project Success, and $30 for subsequent surveys in PS Long. In addition, surveyors typically took participants a package of diapers or a small toy for the participants' child at each survey administration.

Curriculum

Although a curriculum was included in the "standard of care" in the control high schools, Project Success created a comprehensive curriculum for the CM&C group. While the "standard of care" curriculum focused on basic parenting skills, the treatment curriculum added numerous modules to confront what the literature has shown to contribute to teenage pregnancy. The treatment curriculum was comprised of the following constructs: cultural diversity, nurturing skills, family planning/HIV prevention, violence prevention, substance abuse prevention/life skills training, and vocational

education. Botvin's Life Skills Training (1998), Bavolek's Nurturing Program for Teenage Parents and their Families (1989), and parts of Main, Iverson, McGloin, and Banspach et al.'s "Get Real About AIDS" curriculum (1994; Scott, Amodei, Hoffman, Farley, Madrigal, Lewis et al., 2005) were used to formulate the multidimensional curriculum used in Project Success.

Case Management

At the onset of Project Success, a community-based agency was contracted to provide three case managers to present the treatment to participants in the CM&C and the CM groups. The case managers were female, and two were bilingual and bicultural, in order to better match the participants' cultural background.

Case management services were to be based on facilitating a supportive relationship with the participant. Case management services included an initial needs assessment, a treatment plan based on the individual participants' needs assessment, and continuous referrals to appropriate community services. At minimum, case managers were required to have one on-campus, face-to-face contact per month with each participant and five home visits per year. Case managers made monthly phone calls and a minimum of six home visits to participants who were no longer attending school. Additionally, case managers had the option of conducting support groups, psychoeducational groups, and appropriate field trips in order to enrich case management services and address the participants' individual needs.

Some modifications of case management services were made during PS Long. Another community-based agency was contracted to administer case management services in order to replace the agency hired for Project Success. Similarly, monthly

phone calls and a minimum of six face-to-face contacts for each participant were required per year. Case management services also shifted in focus from providing services at school to home-based services. This change was made in response to the fluctuation in high school enrollment due to either degree attainment rates or dropout rates.

Treatment Received by Both Treatment Groups

Case managers created an individual case management plan for each participant that summarized the case manager's goals for the client. This plan was reviewed and updated by the case manager at least twice per year. Case managers assessed the participant's attainment of goals by rating them on a goal attainment form. In addition, case managers were required to keep detailed information regarding the amount of treatment participants used (i.e., amount in hours and minutes and type of case management contact received). Case managers recorded the number, type, focus, duration, and level of services provided by them or referred out.

Curriculum dosage (i.e., treatment) was collected from the teachers in each of the treatment high schools. The event attendance forms filled out by the curriculum teachers identified which participants attended each class and the type, focus, and duration of services included in each lesson or class period. Dosage rates are comprised of curriculum and case management services in combination.

"Standard of Care"

The standard of care included in the three control high schools also consisted of curriculum and case management services. However, Project Success and PS Long treatment services were created to be much more comprehensive and intensive when

compared to the “standard of care.” The “standard of care” curriculum met the Texas Education Agency’s requirements, which stressed basic parenting components (e.g., pre- and postnatal care, child development, infant care, and parenting strategies). Case management services were available in the “standard of care”; however there was one case manager, employed by San Antonio Independent School District, to provide case management services to four campuses. Typically, the case manager provided services to control participants during his/her weekly or biweekly visits to the parenting classes with limited one-on-one services.

Summary of Treatment Received

The CM&C groups' dosage included any combination of the curriculum dosage and case management dosage (administered at any location). The CM only groups' dosage included case management dosage (administered at any location). The control group received "the Standard of Care" previously established in their school; therefore, no dosage was collected for control participants.

Measures

Data for the current study were provided from the comprehensive data collected during Project Success and PS Long, which consisted of national cross-site measures and local measures collected every six months. Although Project Success/PS Long was part of a multi-site study, only data gathered from Project Success/PS Long participants was used in the current study. Participants potentially could have provided data for up to 48 months. Only data that has direct connection to constructs used in the current study are described in the following section.

Project Success and PS Long were two of several longitudinal grants funded by CSAP intended to examine substance use, repeat pregnancy, contraceptive use, educational attainment, and psychosocial factors related to teenage pregnancy. Items and scales included in the surveys for Project Success and PS Long were selected by the multi-site Parenting Adolescent steering committee and the multi-site evaluators. In addition, evaluators at various sites collectively decided on additional cross-site items. Table 5 displays the measures that are applicable for the current study, the instruments, the number of items, and the local and cross-site reliability coefficients, if applicable. Cross-site reliability coefficients are based on 1,787 participants, 42% of whom were Hispanic. Local reliability coefficients are based on the original 302 Project Success participants at baseline. Few differences are noted in reliability coefficients between the cross-site and local participants. Most of the items remained consistent throughout Project Success and PS Long; however, some items were modified or eliminated in subsequent surveys. Items that were included in Project Success but not in PS Long are italicized.

Table 5

Constructs Measured and Reliability Coefficients for Project Success and PS Long

Construct	Instrument*	Measure	Number of items	Local reliability	CS reliability
Demographics	CS	DOB, race, etc.	5	Single items**	
Case mgmt services rec'd	10 CS + 2 local	Frequency of case management/other services	12	Single items	
School status	CS	Education level, grades, attendance	5	Single items	

(table continues)

Table 5 (*continued).*

Construct	Instrument*	Measure	Number of Items	Local Reliability	CS Reliability
Peer social support	MSPSS, CS	Level of peer support	7	.93	.95
Adult social support	CHKS, CS	Level of adult support	4	.80	.82
Symptoms of depression	Adapted, CESD-S	Level of depressed symptoms felt by teen	8	.81	.77
Age of 1st cigarette	GPRA	What age did you first use…?	5	Single items	
Frequency/current use of cigarettes	NYS	Use in last 30 days	7	Single items	
Attitudes towards cigarettes, alcohol, and marijuana	GPRA	Perceived wrongness of use	3	.82	.82
Attitudes towards self-harming behaviors	GPRA	Perceived riskiness of use	5	.82	.82
Pregnancy status	CS	Pregnant now? Months pregnant; child due date,	3	Single items	
Parenting status	CS	# babies had; # living with you; child's DOB	3	Single items	
Parental distress	PSI	Distress with youngest child	12	.86	.87
Gender roles	Local	How traditional or inflexible are gender roles?	5	.53	--
Acculturation	*Acculturation, Local*	*Level of acculturation*	*5*	*.91*	--
Future orientation (local)	*Local*	*Ability to see life in 2 years*	*5*	*Single items*	

Note. Adapted from "PS Long Annual Report Year 02," by UTHSCSA, Division of Community Pediatrics, 2002. *CS are cross-site required items. Local are items of interest applicable to the sample and not included in surveys at cross-sites. MSPSS is the Multidimensional Scale of Perceived Social Support. CHKS is the California Healthy Kids Survey. CES-D, S is the Center for Epidemiological Studies-Depression Scale, Short. GPRA is the Government Performance and Results Act. PSI is the Parenting Stress Index. **"Single items" include individual items that were not appropriate to combine in order to formulate a scale; hence do not include reliability coefficients.

Educational Attainment

Educational attainment and outcomes were measured by a) school enrollment, b) degree attainment, and c) last grade completed. School enrollment and degree attainment were categorical items, while the item identifying last grade completed included ordinal response choices between the fourth and twelfth grades and beyond the twelfth grade.

Educational Expectations

The educational expectations score was created using items 18, 22, 28, 30, and 32 that asked participants about effort on homework, expectation of graduating high school, school being a waste of time, trusting their own judgment when making academic-related decisions, and intentions of attending post-graduate classes. Items were answered using a 4-point Likert-type scale. Some items were reverse scored so that high numbers coincided with high educational expectations. All five items were then averaged in order to obtain the participants' mean score on the educational expectation items. Participants were considered to have valid scale scores if they answered four out of the five questions of the scale (i.e., 80% of the items in the scale). Participants' mean scores ranged from one to four.

Substance Use

The Government Performance and Results Act (GPRA) survey and the National Youth Survey (NYS) were adapted and employed, specifically focusing on the numbers of days, amounts, and types of substances used (i.e., alcohol, cigarettes, and marijuana). Three items were used to measure alcohol use: during the last 30 days, a) how many days did the participant use alcohol, b) how many drinks a day were had on

the days they used alcohol, c) and how many days did participants have four or more drinks. Participants answered these items using an ordinal scale; for example when asked how many days a participant used alcohol during the last 30 days, answer choices included: a) none, b) 1 to 2, c) 3 to 5, d) 6 to 9, e) 10 to 19, and f) 20 to 30. Two items were used to measure cigarette use, asking participants how many days in the last month they smoked cigarettes and how many cigarettes they smoked on the days they smoked. The same two items were used to measure marijuana use. The items that identified how many days in the last month they used cigarettes/marijuana/alcohol included the same answer choices (as previously identified). The item asking how many cigarettes they smoked on the days they smoked included ordinal response choices of a) none (i.e., not applicable), b) 1 to 2 cigarettes a day, c) 3 to 7 cigarettes a day, d) about a half a pack (e.g., 10 cigarettes) a day, and e) a pack or more a day. The item asking how many times a day participants used marijuana on the days they used marijuana included response choices of a) none (i.e., not applicable), b) once a day, c) twice a day, and d) three times or more a day.

Attitudes towards Substance Use

Also included in the current study are items that measure the participants' perceived wrongness and riskiness associated with substance use. Items included in the Wrongness and Riskiness subscales were answered using a 4-point Likert-type scale ranging from *very wrong/risky* to *not at all wrong/risky*. The wrongness scale included three items; how wrong did the participant feel it was for someone their age to use a) cigarettes, b) alcohol, and c) marijuana. Scores on the three items were averaged in order to obtain the participants' mean score on perceived wrongness of

substance use. Participants were considered to have valid scale scores if they answered two out of the three questions of the scale (i.e., 66% of the items in the scale). The riskiness scale included five items identifying a participants' perception that using cigarettes, alcohol, and marijuana were risky. Participants were asked the riskiness of a) smoking a pack or more a day, b) using marijuana once or twice a month, c) using marijuana once or twice a week, d) having four to five drinks (of alcohol) a day, and e) having four or more drinks (of alcohol) once or twice a week. The five items were averaged in order to obtain the participants' mean score on perceived riskiness of substance use. Participants were considered to have valid scale scores if they answered three out of the five questions of the scale (i.e., 60% of the items in the scale).

Repeat Pregnancy

Repeat pregnancy was measured using single items asking participants if they were currently pregnant, how many months, the number of pregnancies they had experienced, and the number of biological children they had. All response choices were either categorical or ordinal. For example, the item asking if they were currently pregnant response choices were a) yes, b) no, c) don't know, and the item asking how many biological children they had response choices included a) one, b) two, c) three, d) four or more.

Acculturation

The acculturation scale used in the baseline Project Success survey included five items focusing on the participants' language use. Items included language generally used, language spoken as a child, language currently used in the home, language used

with friends outside of the home, and language in which the participant thinks. Items were rated on a 5-point Likert-type scale, including answer choices of *only Spanish, more Spanish than English, both equally, more English than Spanish,* and *only English.*

Symptoms of Depression

Items from the Center for Epidemiological Studies (CES-D; Radloff, 1977) were used to evaluate participants' level of symptoms of depression. Eight items were rated on a 4-point Likert-type scale, ranging from *none of the time* to *all of the time*. Items included statements such as "I felt lonely" and "I enjoyed life" during the past week. Some items were reverse scored so high scores represented increased symptoms of depression. The eight items were averaged in order to create the scale score. Participants' scaled scores were considered valid if they answered at least six of the eight items in the scale (i.e., 75% of the items in the scale).

The CES-D (Radloff, 1977) was originally designed to measure symptoms of depression in a general adult population. Since its creation, researchers have validated the original measure or variations of the original measure, including a Spanish version, in adult Hispanic populations (Bromberger, Harlow,Avis, Kravits, & Cordal, 2004; Golding & Aneshenssel, 1989; Lipton, 1997; Miller, Markides, & Black, 1997; Perez-Stable, Marin, Marin, & Katz, 1990; Posner, Stewart, Marin, & Perez-Stable, 2001), adolescent populations (Roberts, Andrews, Lewinsohn, & Hops, 1990; Poulin, Hand, Boudreau, & Santor, 2005), and Hispanic adolescent populations (Guiao & Thompson, 2004; Crockett, Randall, Shen, Russell, & Driscoll, 2005[2]). Some research (Crockett et al., 2005; Miller et al., 1997; Posner et al., 2001) indicates that CES-D symptomology

[2] Guiao & Thompson (2004) and Crockett, Randall, Shen, Russell, & Driscoll (2005) used the same data in their studies.

for Hispanic subgroups does not adhere to the same four-factor structure as does symptomology for Caucasians, and researchers suggest caution when using cut-off scores for various ethnic populations. Therefore, symptoms of depression were examined in the current study as a continuous variable (i.e., number of symptoms) rather than a categorical variable (i.e., depressed versus not depressed).

Parental Distress

The modified version of the Parenting Stress Index (PSI; Abidin, 1990) consisted of 12 items rated on a 5-point Likert-type scale, ranging from *strongly agree* to *strongly disagree*. Items included questions about the teen's perceived sacrifice, happiness about time spent alone, parental efficacy, and parental expectations. Participants' scaled scores were considered valid if they answered at least 9 of the 12 items in the scale (i.e., 75% of the items in the scale). Some items were reverse scored so high scores on the parental distress scale represented high levels of parental distress. The 12 items were averaged to obtain the mean scaled score.

The PSI has been validated in many populations, including Hispanics, resulting in internal consistency alpha scores ranging from .80 to .89 among Hispanic adults (when noted; Briggs-Gowan, Carter, Skuban, & Horwitz, 2001; Reitman, Currier, & Stickle, 2002). Studies among adolescent populations also reported high internal consistency alpha scores (ranging from .91 to .94 when noted; Larson, 2004; Passino & Whitman, 1993; Secco & Moffatt, 2003). A Spanish version has also been validated with Hispanic adult mothers resulting in acceptable internal consistency alpha scores of .88 for the child domain and .92 for the parent domain (Solis & Abidin, 1991).

Social Support

Social support was measured in terms of adult and peer social support. Adult social support was measured using a subscale of the California Healthy Kids Survey (CHKS). Four items rated on a 4-point Likert-type scale were included. Response options ranged from *very true* to *not at all true*. Items included statements such as "There is an adult in my life who really cares about me" and "There is an adult in my life who I trust." Participants' scale scores were considered valid if they answered at least three of the four items (i.e., 75% of the scale). Items were reverse scored so high numbers represented high social support and the mean of the items was calculated in order to create the scale score.

Peer social support was measured using a modified version of the Multidimensional Scale of Perceived Social Support, Friends subscale (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). The scale consisted of seven items, and the items were rated on a 4-point Likert-type scale, ranging from *very true* to *not at all true*. Items included statements such as "There is a friend in my life who is around when I need a friend" and "There is a friend in my life who really tries to help me." Participants' scale scores were considered valid if they answered at least six of the seven items (i.e., 86% of the scale). Items were reverse scored so high numbers represented high social support and the mean of the items was calculated to obtain a scale score representing social support from friends.

The MSPSS Friends subscale has been found to have high internal reliability with alpha coefficients ranging from .85 to .94 and has been validated with various populations (Chou, 2000; Kazarian & McCabe, 1991; Zimet, Powell, Farley, Werkman,

& Berkoff, 1990) including pregnant participants ranging in age from 16 to 42 (alpha = .94; Zimet et al., 1990) and Mexican American adolescents (alpha = .90; Edwards, 2004).

Gender Roles.

The measure was composed of five items that were rated on a 5-point Likert-type scale, ranging from *strongly agree* to *strongly disagree*. Items included statements such as “Men should not hold jobs traditionally held by women” and “People should not be expected to behave in certain ways just because they are male or female.” Some items were reverse scored, so high scaled scores on the gender role scale represented belief in more traditional gender roles.

CHAPTER III

RESULTS

Demographics

As previously reported, Project Success recruited 302 participants who agreed to participate in the research study and who took the baseline survey. Table 6 displays demographic data for the 302 Project Success participants at baseline. Analyses were performed to identify any initial differences on demographic variables between the treatment groups. Probabilities for each analysis and the type of analysis are identified in Table 6.

In general, few significant group differences were found among participants in demographic variables (Project Success Longitudinal [PS Long] Annual Report, 2002). However, participants in the case management only treatment group (CM) were significantly less likely to have tried marijuana at some point in their lives than participants in the control and case management and curriculum treatment group (CM&C). Possible explanations for this group difference are unclear.

Table 6

Psychometric Properties of Demographic Variables for Treatment Groups at Baseline

Characteristic	Control (*n* = 128)	CM&C (*n* = 111)	CM only (*n* = 63)	Significance (test)
Mean age (*SD*)	16.96 (1.10)	16.84 (1.17)	17.12 (1.13)	.302 (ANOVA)
Race/Ethnicity	92% Hispanic 3% African-Amer. 1% Caucasian 3% Biracial 1% Other	88% Hispanic 9% African-Amer. 0% Caucasian 3% Biracial 0% Other	87% Hispanic 11% African-Amer. 2% Caucasian 0% Biracial 0% Other	.271 (Chi-square)

(table continues)

Table 6 *(continued).*

Characteristic	Control (*n* = 128)	CM&C (*n* = 111)	CM only (*n* = 63)	Significance (Test)
Education level completed	15% 8th 28% 9th 32% 10th 24% 11th 0%12th	21% 8th 24% 9th 32% 10th 23% 11th 0% 12th	18% 8th 27% 9th 18% 10th 35% 11th 1.6% 12th	.165 (Chi-square)
Parenting status	38% 1st pregnancy 56% repeat preg. 6% parenting	44%1st pregnancy 51% repeat preg. 5% parenting	41%1st pregnancy 54% repeat preg. 5% parenting	.899 (Chi-square)
Ever used cigs	26% No 74% Yes	26% No 74% Yes	35% No 65% Yes	.360 (Chi-square)
Ever used alco.	20% No 80% Yes	15% No 85% Yes	24% No 76% Yes	.316 (Chi-square)
Ever used marij.	35% No 65% Yes	38% No 62% Yes	61% No 39%Yes	.002 (Chi-square)
Ever used inhal.	89% No 11% Yes	87% No 13% Yes	95% No 5% Yes	.258 (Chi-square)
Ever used other	76% No 24% Yes	75% No 25% Yes	77% No 23% Yes	.915 (Chi-square)

Attrition

Chi-square analyses were performed to examine whether there were any differences on demographic variables between participants who chose to participate in PS Long and those who did not. No significant differences were found among participants who enrolled in PS Long compared to teens who participated in Project Success but not in PS Long. Additionally, no significant differences were found

between treatment groups among PS Long participants in regards to age, race, school status, grades, parenting status, geographic mobility, and substance use.

T-tests were performed to examine potential age differences among participants in each treatment group who took the survey at each data collection point compared to those who dropped out. Analyses were performed using age as the dependent variable and dropout status as the independent variable. Overall, few significant differences were found between dropouts' and nondrop-outs' ages. No significant differences were found among control group participants regarding their age and attrition status (i.e., dropouts compared to non-dropouts). In addition, no significant differences were found among CM&C group participants regarding their age and attrition status. However, there was a significant difference in age among CM only group participants at the 24-month survey. CM only participants who took the 24-month follow-up survey were significantly younger (M = 16.51, SD = .99) than CM only participants who did not take the 24-month survey (M = 17.46, SD = 1.03, t(9.82) 2.46, p = .03). Independent t-test results indicated a Cohen's d of .94 exhibiting a large effect size. Similar results were found at 36 months. CM group participants who took the 36-month follow-up survey were significantly younger (M = 16.37, SD = .99) than CM group participants who did not take the 36-month follow-up survey (M = 17.21, SD = .99), t(13.22) 2.25, p = .04. Again, the effect size for the age difference was large, indicated by Cohen's d of .85.

Repeated Measures Analysis of Variance

In order to gain an understanding of the general effects of treatment over time as well as determine potential covariates for further analyses, variables used in hypotheses were examined by treatment group. Repeated measures ANOVAs were performed to

examine longitudinal differences between treatment groups for the following variables: substance use, attitudes towards substance use, symptoms of depression, parental distress, social support, and dosage.

Substance Use

Participants in different treatment groups did not report significant differences in their alcohol, marijuana, or cigarette use when compared to each other. In addition, participants as a whole did not show significant differences over time in their alcohol, marijuana se, or cigarette use. Although participants in the three treatment groups did not differ significantly in their reported use of other drugs, all participants reported significant changes in use over time. The variable that measured use of other drugs included use of any of the following substances: cocaine/crack cocaine, heroin or opium, methadone (non prescription), speed or uppers, downers or tranquilizers, PCP or Angel Dust, ecstasy, LSD or Acid, other hallucinogens (psychedelics, mushrooms, mescaline), and inhalants (paint, lighter fluid, aerosols). A significant quadratic effect was found for other drug use, $F(1) = 13.97$, $p = .001$, indicating that participants as a whole (i.e., all treatment groups) reported a decrease of other drug use over time and then reported a significant increase (see Figure 2).

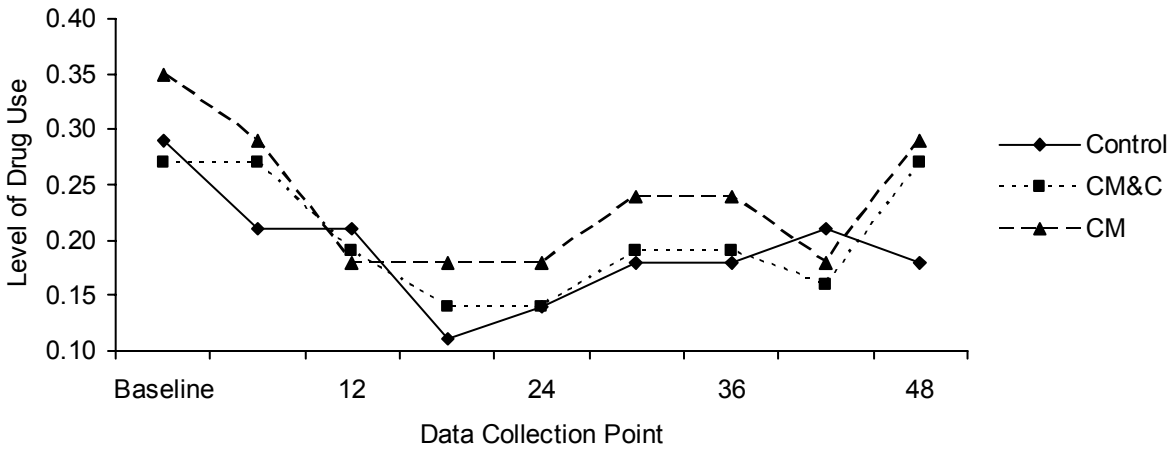

Figure 2. Repeated measures ANOVA measuring other drug use. (*N* = 82)

Attitudes towards Substance Use

Participants, as a whole, reported a significant decrease in the perceived wrongness of using substances over time. A significant linear effect was found for wrongness of substance use, $F(1) = 22.01$, $p = .001$ (see Figure 3). However, treatment groups did not report a significant difference when compared to the other treatment group(s) in their perceived wrongness of substance use. Additionally, participants did not report any significant differences in perceived wrongness of substance use either over time or between groups.

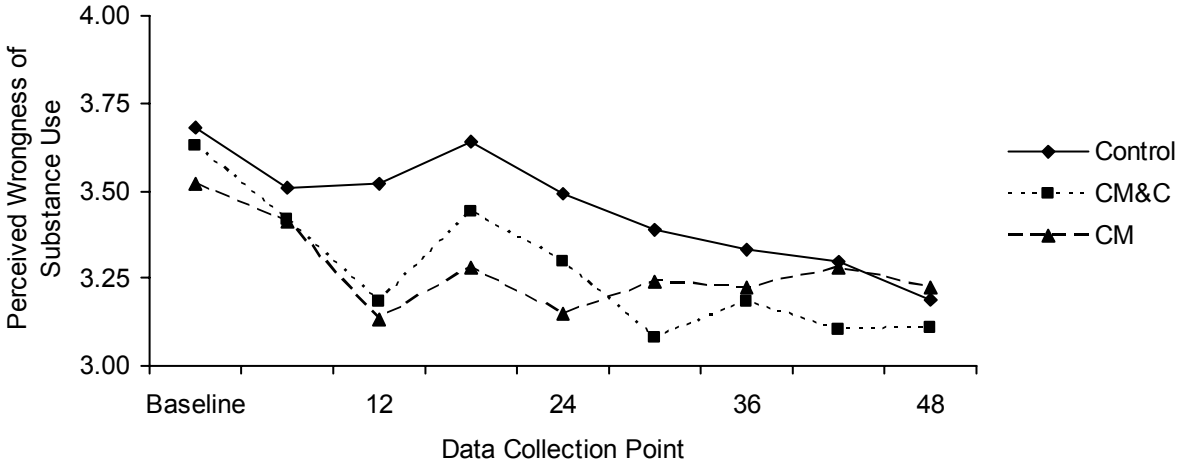

Figure 3. Repeated measures ANOVA measuring perceived wrongness of substance use. (*N* = 84)

Symptoms of Depression

Participants also reported a general increase in symptoms of depression over time. A significant linear effect was found for symptoms of depression, $F(1) = 7.17$, $p = .009$, indicating that symptoms of depression for all treatment groups increased over time between Baseline and the 48-month follow-up survey (see Figure 4). However, treatment groups did not significantly differ regarding their reported symptoms of depression. Specifically, rates of depressive symptoms tended to decrease from baseline to 24 months and then increased after the 24 month follow-up survey.

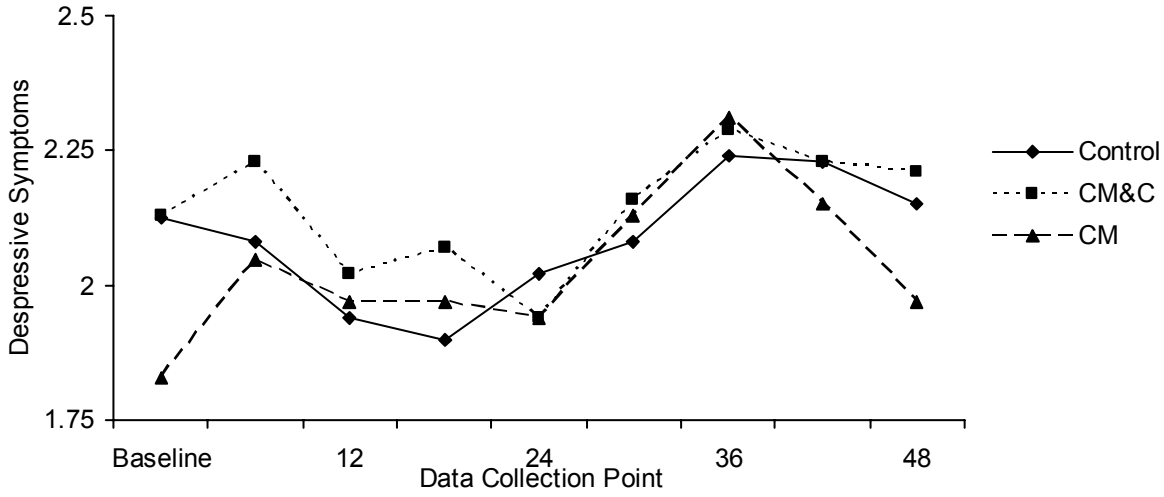

Figure 4. Repeated measures ANOVA measuring symptoms of depression. (*N* = 84)

Parental Distress

Participants reported changes over time in their distress as parents. Both a significant linear effect and a significant cubic effect were found for parental distress, $F(1) = 20.84$, $p = .001$ (linear) and $F(1) = 3.95$, $p = .05$ (cubic; see Figure 5). It appears that parental distress for all treatment groups decreased over time, but also fluctuated at various data collection points. Participants in different treatment groups did not differ significantly in rates of parental distress.

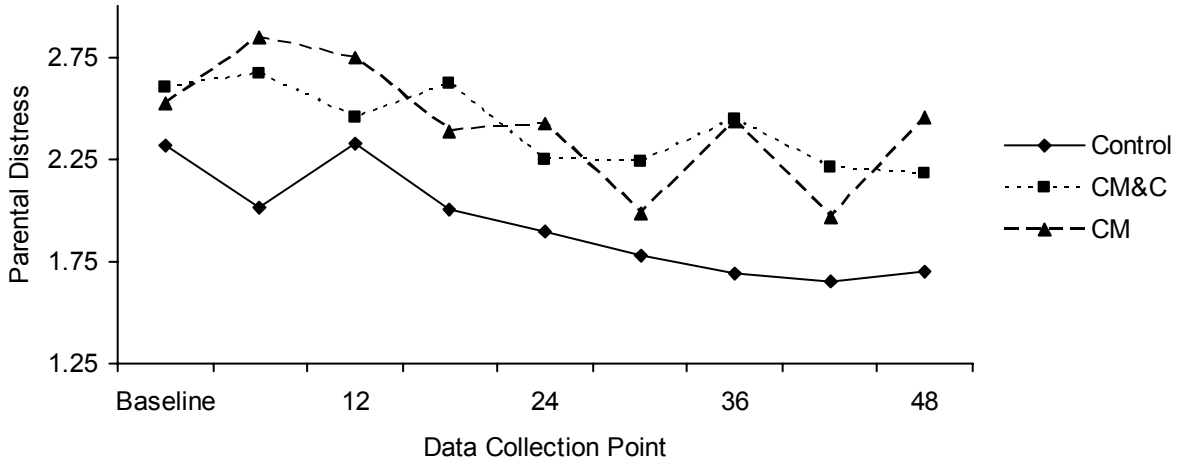

Figure 5. Repeated measures ANOVA measuring parental distress. (*N* = 46)

Correlations

Bivariate correlations were performed to examine the relationships among the following variables at baseline: educational expectations, substance use, attitudes towards substance use, symptoms of depression, parental distress, social support, gender roles, and dosage. Pearson correlations are displayed in Table A.2.

Educational Expectations

Participants who reported that they were motivated to finish their high school degree also reported fewer symptoms of depression, $r(294) = -.17$, $p < .01$. Additionally, participants who reported higher educational expectations tended to report higher scores on peer support, $r(293) = .15$, $p < .05$ and riskiness of substance use, $r(293) = .14$, $p < .05$ with small effect sizes. Moreover, participants who reported lower educational expectations tended to have stronger traditional gender role values, $r(292) = -.15$, $p < .05$ at small effect size.

Substance Use and Attitudes Towards Substance Use

As previously stated, participants who perceived risk in using substances tended to report more motivation to finish their degree. In addition, they perceived substance use as wrong, $r(298) = .43$, $p < .01$, indicating a medium effect size. As expected, the variables measuring alcohol use, marijuana use, and smoking were correlated positively at small to medium effect sizes; hence, participants who used one substance tended to use other substances. In addition, participants who viewed using substances as risky reported higher levels of adult social support. See Table A.2 for significant correlations.

Psychoemotional and Psychosocial Variables

Participants' reported levels of parental distress, symptoms of depression, social support, and gender role beliefs were evaluated in order to determine correlates to each other as well as substance variables and dosage. Participants who reported symptoms of depression tended to report more parental distress, $r(171) = .44$, $p < .01$ at a medium effect size. Also, participants who reported symptoms of depression tended to report less peer support, $r(299) = -.29$, $p < .01$ and less adult support, $r(300) = -.23$, $p < .01$ with small effect sizes. Similar results were found for parental distress in regards to peer and adult social support; participants who reported parental distress also tended to report less peer support, $r(174) = -.24$, $p < .01$ and less adult support, $r(174) = -.17$, $p < .05$.

Concerning gender roles, participants who reported believing in more traditional gender roles also reported having more adult social support, $r(297) = .12$, $p < .05$ with a small effect size. As previously stated, participants who held stronger traditional gender role values reported lower educational expectations.

Hypotheses

Hypothesis 1

It was hypothesized that the treatment groups would have higher educational attainment than the control group at each data collection point. Educational attainment was examined through participants' degree attainment, enrollment status, and highest grade completed. Frequencies of participants who earned a degree are displayed in Table 7.

Table 7

Cumulative Frequencies for Degree Attainment by Treatment Group*

Data collection point	Control group		CM&C group		CM only group		Pearson Chi-square *p* value	Total	
	n	%	*n*	%	*n*	%		*n*	%
Baseline (*N* = 295)	0	0	1	1	3	5		4	1
6 months (*N* = 255)	7	6	4	2	17	25	.01	28	11
12 months (*N* = 224)	19	17	9	9	17	33	.01	45	20
18 months (*N* = 210)	25	21	15	18	25	49	.01	65	31
24 months (*N* = 187)	35	41	24	33	25	57	.35	84	45
30 months (*N* = 209)	47	46	31	37	27	62	.24	105	50
36 months (*N* = 197)	49	52	38	43	26	58	.49	113	57
42 months (*N* = 184)	49	60	41	54	30	66	.56	120	65
48 months (*N* = 169)	46	60	38	52	25	62	.63	109	64

* Degree attainment is defined as having a high school diploma or a GED.

Chi-square analyses were performed on the two ordinal variables measuring degree attainment and enrollment status. Chi-square analyses displayed significant differences in degree attainment at the 6-month, 12-month, and 18-month data

collection points (see Table 7). Participants in the CM only group were most likely to have earned their high school diploma at the 6-month, $\chi^2(4, N = 255) = 29.08$, $p = .01$, 12-month, $\chi^2(6, N = 224) = 16.26$, $p = .01$, and 18-month data collection points, $\chi^2(6, N = 210) = 17.92$, $p = .01$.

School enrollment was examined for participants who had not attained their high school degree (i.e., diploma or GED) at each data collection point. For that reason, chi-square analyses were performed on academic enrollment by treatment group at each data collection point, excluding participants who had already attained their high school degree at that data collection point. Significant differences were found at 6 months and 30 months. At the 6-month data collection point, 76% of participants in the control group, 82% of participants in the CM&C group, and 80% of participants in the CM only group among who had not yet earned their high school diploma were enrolled in an academic program $\chi^2(6, N = 227) = 15.93$, $p = .01$. At the 30-month data collection point, 36% of participants in the control group, 48% of participants in the CM&C group, and 29% of participants in the CM only group among who had not yet earned their high school diploma were enrolled in an academic program $\chi^2(4, N = 96) = 9.33$, $p = .05$. Table 8 displays percentages of participants in each treatment group who were enrolled in an academic program at each data collection point, excluding individuals who had received their degree. Although the groups did not differ significantly at most of the data collection points, participants who received both the curriculum and the case management services (CM&C group) had the highest enrollment percentages at most data collection points compared to the control and CM only groups.

Table 8

Percentages of Academic Enrollment Prior to Degree Attainment by Treatment Group*

Data collection point	Control group	CM&C group	CM only group	Total
Baseline	95	100	96	97
6 months	76	82	80	80
12 months	68	77	68	71
18 months	62	63	50	60
24 months	35	51	44	43
30 months	36	48	29	40
36 months	24	35	8	25
42 months	9	26	11	16
48 months	5	6	0	5

* Degree attainment in the table is defined as having a high school diploma or a GED.

In order to assess if pregnancy status impacted school enrollment, chi-squares were performed to measure enrollment status by treatment group among participants who had not yet attained their degree and those who were not pregnant during the data collection point measured. Chi-square analyses excluding participants who were pregnant at each data collection point showed similar results; participants' enrollment differed significantly at 6 months and 30 months. At the 6-month data collection point, 72% of the control group, 79% of the CM&C group, and 56% of the CM only group were enrolled in school, $\chi^2(12, N = 245) = 42.44$, $p = .001$. Similarly, 18% of the control group, 27% of the CM&C group, and 10% of the CM only group were enrolled at the 30-month data collection point, $\chi^2(10, N = 183) = 21.20$, $p = .02$.

Additionally, participants' highest grade completed was assessed by treatment group. One-Way ANOVAs were performed measuring highest grade completed comparing participants in each treatment group. Results indicated that participants reported significant differences in the highest grade completed by treatment group at Baseline, $F(299, 2) = 3.46$, $p = .03$, 6 months, $F(253, 2) = 11.31$, $p = .01$, 12 months $F(227, 2) = 6.89$, $p = .01$, and 18 months $F(211, 2) = 5.26$, $p = .01$. Post-hoc results indicated that at baseline, the two treatment groups were significantly different in highest grade completed. However, at 6, 12, and 18 months, participants in CM only had significantly higher rates than participants in the control or the CM&C group.

Based on the previous bivariate correlation analysis, variables measuring traditional gender role values, symptoms of depression, peer support, and perceived riskiness of substance use were examined as covariates potentially affecting enrollment status. As previously stated, participants who reported high traditional gender role beliefs also tended to report low educational expectations ($r = -.15$). Therefore, ANCOVAs by treatment group were performed at each data collection point comparing highest grade completed while controlling for the effect of gender role. Participants remained significantly different by treatment group in their highest grade completed at Baseline, 6 months, 12 months, and 18 months above and beyond the effects of gender role beliefs. ANCOVA results for grade completed by treatment group with gender role as a covariate are displayed in Table 9.

Table 9

Grade Completed by Treatment Group with Gender Role as a Covariate

Data collection point	Control group	CM&C	CM only	ANCOVA	ANCOVA	Partial η^2
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	*F* value	*p* value	
Baseline	9.7 (1.0)	9.5 (1.1)	9.9 (1.1)	3.58	.03	.02
6 months	10.1 (1.1)	9.8 (1.0)	10.8 (1.3)	11.64	.01	.09
12 months	10.6 (1.1)	10.3 (.98)	11.0 (1.2)	7.34	.01	.06
18 months	10.9 (1.1)	10.6 (1.1)	11.3 (1.2)	5.47	.01	.05
24 months	11.3 (1.2)	11.0 (1.1)	11.4 (1.2)	2.68	.07	.03
30 months	11.4 (1.1)	11.2 (1.1)	11.5 (1.3)	1.31	.27	.01
36 months	11.5 (1.2)	11.4 (1.2)	11.5 (1.3)	.64	.53	.01
42 months	11.6 (1.3)	11.7 (1.3)	11.7 (1.2)	.046	.96	.01
48 months	11.8 (1.2)	11.7 (1.3)	11.7 (1.2)	.450	.64	.01

Participants with higher educational expectations also reported significantly lower levels of symptoms of depression, peer support, and perceived riskiness of substance use. Therefore, these variables were also considered as potential covariates impacting highest grade completion among participants. Participants' highest grade level was compared by treatment group using an ANCOVA with depression as a covariate. Results indicated that participants in the different treatment groups differed significantly in rates of highest grade completed at baseline, 6-months, 12-months, and 18-months beyond the significant effect of depression. See Table 10 for ANCOVA results. Similarly, participants differed significantly in highest grade level completed when peer support was controlled as well as perceived riskiness of substance use. See tables 11 and 12 for ANCOVA results.

Table 10

Grade Completed by Treatment Group with Symptoms of Depression as a Covariate

Data collection point	Control group	CM&C	CM only	ANCOVA	ANCOVA	Partial η^2
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	*F* value	*p* value	
Baseline	9.7 (1.0)	9.5 (1.1)	9.9 (1.1)	3.4	.04	.02
6 months	10.8 (1.1)	9.9 (1.1)	10.8 (1.3)	10.01	.01	.07
12 months	10.6 (1.1)	10.3 (.98)	11.0 (1.2)	6.23	.01	.05
18 months	10.8 (1.1)	10.6 (1.1)	11.3 (1.2)	4.93	.01	.05
24 months	11.3 (1.2)	11.0 (1.1)	11.4 (1.2)	1.91	.15	.02
30 months	11.4 (1.1)	11.2 (1.1)	11.5 (1.3)	1.11	.33	.01
36 months	11.3 (1.2)	11.4 (1.2)	11.5 (1.3)	.35	.70	.01
42 months	11.6 (1.3)	11.7 (1.3)	11.7 (1.2)	.06	.94	.01
48 months	11.8 (1.2)	11.7 (1.3)	11.7 (1.2)	.25	.78	.01

Table 11

Grade Completed by Treatment Group with Peer Support as a Covariate

Data collection point	Control group	CM&C	CM only	ANCOVA	ANCOVA	Partial η^2
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	*F* value	*p* value	
Baseline	9.7 (1.0)	9.5 (1.1)	9.9 (1.1)	3.27	.04	.02
6 months	10.1 (1.1)	9.9 (1.1)	10.8 (1.3)	9.58	.01	.07
12 months	10.6 (1.1)	10.3 (.98)	11.1 (1.2)	6.68	.01	.06
18 months	10.8 (1.1)	10.6 (1.1)	11.3 (1.2)	5.44	.01	.05
24 months	11.3 (1.2)	11.0 (1.1)	11.4 (1.2)	1.99	.14	.02
30 months	11.4 (1.1)	11.2 (1.1)	11.5 (1.3)	.95	.39	.01

(table continues)

Table 11 *(continued).*

Data collection point	Control group	CM&C	CM only	ANCOVA	ANCOVA	Partial η^2
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	*F* value	*p* value	
36 months	11.5 (1.2)	11.4 (1.2)	11.5 (1.3)	.29	.75	.01
42 months	11.6 (1.3)	11.7 (1.3)	11.7 (1.2)	.04	.96	.01
48 months	11.8 (1.2)	11.7 (1.3)	11.7 (1.2)	.33	.72	.01

Table 12

Grade Completed by Treatment Group with Perceived Riskiness of Substance Use as a Covariate

Data collection point	Control group	CM&C	CM only	ANCOVA	ANCOVA	Partial η^2
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	*F* value	*p* value	
Baseline	9.7 (1.0)	9.5 (1.1)	9.9 (1.1)	3.32	.04	.02
6 months	10.1 (1.1)	9.9 (1.0)	10.8 (1.3)	8.74	.01	.07
12 months	10.6 (1.1)	10.3 (.98)	11.0 (1.2)	6.32	.01	.05
18 months	10.8 (1.1)	10.6 (1.1)	11.3 (1.2)	4.89	.01	.05
24 months	11.3 (1.2)	11.0 (1.1)	11.4 (1.2)	1.86	.16	.02
30 months	11.4 (1.1)	11.2 (1.1)	11.5 (1.3)	.77	.47	.01
36 months	11.5 (1.2)	11.4 (1.2)	11.5 (1.3)	.29	.75	.01
42 months	11.6 (1.3)	11.7 (1.3)	11.7 (1.2)	.04	.96	.01
48 months	11.8 (1.2)	11.7 (1.3)	11.7 (1.2)	.25	.78	.01

In summary, the researcher hypothesized that the treatment groups (i.e., CM&C and CM only) would have higher educational attainment as shown by degree attainment, school enrollment, and grade completion when compared to the control

group. Results indicated that this was the case at some data collection points. Participants in one of the treatment groups, the CM only group, were more likely to have completed their degree at 6 months, 12 months, and 18 months. However, treatment groups did not differ significantly in regards to degree attainment after the 18-month follow-up. Additionally, groups did not differ significantly in their school enrollment except at 6 months and 30 months. Finally, treatment groups differed significantly in their highest grade completed at 6 months, 12 months, and 18 months, despite the effect of gender role beliefs, symptoms of depression, peer support, and perceived riskiness of substance use.

Hypothesis 2

It was hypothesized that educational attainment at each data collection point would be associated with the amount of treatment participants received during the study up until that data collection point (i.e., cumulative dosage). Pearson correlations were performed in order to assess if participants' highest grade completion at each data collection point was associated with their cumulative treatment received at that data collection point. Results indicated that at the 6-month follow-up, treatment group participants (either CM only or CM&C) who received less dosage tended to report higher grade completion, $r(147) = -.30$, $p = .001$ with a moderate effect size. This finding does not support the hypothesis that increased treatment would be associated with increased grade completion.

After consideration of a possible non-linear effect in regards to highest grade completion, treatment participants' level of dosage impacting degree attainment was assessed. One-way ANOVAs were used to compare participants with different levels of

educational attainment in their amount of treatment in minutes received. Significant differences were found at 6 months, $F(2, 146) = 6.67$, $p = .01$, 12 months, $F(3, 120) = 3.44$, $p = .02$, and 18 months, $F(2, 100) = 3.19$, $p = .03$. The number of participants, means, and standard deviations for each group are presented in Table 13.

Table 13

Means and Standard Deviations for Educational Attainment and Treatment Received

Data collection point	*N*	Mean and standard deviation								
		No degree			HS diploma			GED		
		Mean	(*SD*)	*n*	Mean	(*SD*)	*n*	Mean	(*SD*)	*n*
6 months	147	3145	(2519)	126	1029	(1638)	5	1185	(1328)	16
12 months	121	5505	(3799)	94	3205	(3601)	4	2205	(1222)	22
18 months	101	6142	(4024)	66	3854	(3544)	5	4325	(3326)	30
24 months	73	6599	(4166)	38	5786	(3794)	2	5854	(4153)	31
30 months	37	6298	(4928)	21	5920	(4234)	1	8805	-	15
36 months	32	5988	(3991)	11	6817	(5644)	3	7056	(3418)	15
42 months	26	6999	(5030)	8	7665	(6124)	3	7252	(3182)	12
48 months	17	6073	(5098)	6	7649	(4542)	2	17148	(11565)	7

*Other educational attainment included a vocational certificate and/or associate's degree.

Scheffe post hoc results indicated that participants who had not earned a high school degree received significantly more treatment than participants who had earned their diploma or GED at the 6 month ($p = .01$) and 18 month ($p = .03$) data collection points. Post hoc analysis was not performed at the 12-month data collection point due to the low number of participants in the vocational certificate group ($n = 1$). Potential covariates such as number of children, parental distress, symptoms of depression,

acculturation, and gender roles were examined; however, none of these variables were correlated with treatment received and hence dismissed as covariates from this analysis.

Hypothesis 3

It was hypothesized that concurrent mental health variables (e.g., educational expectations, parental distress, symptoms of depression, peer social support and adult social support) would impact the amount of treatment (i.e., dosage) received at each data collection point. After evaluating the goals of the analysis and the ratio between the number of predictors and the number of treatment participants, simultaneous Multiple Regression was used to test this hypothesis (Clark, 2007; Cohen, Cohen, West, & Aiken, 2003). Treatment received (dosage in minutes) was used as the criterion variable. Predictor variables included educational expectations, parental distress, symptoms of depression, peer social support, and adult social support. Analyses were run for the CM&C group and the CM only group separately, and then with the two treatment groups combined to measure potential differences that the curriculum contributed to the prediction model. This resulted in 23 multiple regression analyses; three for each of the eight data collection points with the exception of one analysis at 48-months due to an inadequate *n*.

According to the results, participants' reported psychosocial variables (i.e., educational expectations, parental distress, symptoms of depression, peer social support, and adult social support) did not predict treatment received among the combined treatment participants or among the CM only group. Results from multiple regression analyses of the CM&C group produced two significant models; one at 12

months and another at 48 months. However, at the 12-month data collection point, only one variable (peer support; β = -.25, p = .04) significantly contributed to the multiple regression model, *Adjusted* R^2 = .14; $F(5, 78) = 2.31$, p = .05. At 48 months, three variables contributed to the model; however, only ten participants were included in the analyses. Hence, multiple regression results at 48 months were not presented due to low *n.*

Hypothesis 4

It was hypothesized that concurrent mental health variables (e.g., educational expectations, parental distress, symptoms of depression, and social support) and the amount of treatment received would impact the amount of educational change as well as continued dosage. Preliminary results identified parental distress and educational expectations as variables that would potentially affect educational change. In order to address this hypothesis, three multiple regression analyses were performed to assess educational change between 12 and 36 months. Data collection points of 12-months and 36-months were chosen based on age of participants at baseline, subsequently excluding the 6-months due to most participants not having adequate amount of time to finish their degree despite pregnancy and drop-out status. Additionally, data collection points after 36-months were excluded due to the limited number of participants.

Participants' educational change, that is change of degree status within 36 months, was measured using educational expectations and dosage. Regression results indicated that participants' reports of their expectations for their education and the amount of dosage received did not significantly predict educational change between the 12-month and 36-month data collection points. Additionally, participants' level of

educational expectations and parental distress at 12 months did not significantly predict the amount of treatment participants sought between 12 and 36 months.

In order to further address this hypothesis, participants' tendency towards seeking treatment dosage was measured in terms of its impact on degree attainment. Chi-square analyses were performed measuring level of dosage (i.e., none, low dosage, high dosage) and degree attainment at each data collection point. Significant results were found at 12 months, 18 months, and 24 months. Participants who did not have a degree at 6 months appeared to receive more dosage in the following 6 months period (between the 6-month and 12-month surveys), $\chi^2(2, N = 147) = 8.48$, $p = .01$. Similarly, participants who did not have a degree at 12 months received more dosage between 12 and 18 month follow-up surveys, $\chi^2(2, N = 119) = 8.69$, $p = .01$, and participants who did not have their degree at 18 months received more dosage during the following 6 month period, $\chi^2(2, N = 110) = 11.51$, $p = .01$. Results indicated a trend during the first two years of the study that participants who did not have a degree received more dosage during the following 6-month period. However, significant results were not found after the 24-month follow-up. See Table 14 for percentages of participants receiving levels of dosage between 6 and 24 months.

Table 14

Percentages for Participants' Level of Dosage between 6 Months and 24 Months

	No Dosage		Low Dosage*		High Dosage*		Total	
	%	*n*	%	*n*	%	*n*	%	*n*
6 months								
No Degree	75	9	78	50	94	67	86	126
Degree	25	3	22	14	6	4	14	21
12 months								
No Degree	75	9	67	32	90	53	80	94
Degree	25	3	33	16	10	6	21	25
18 months								
No Degree	59	19	49	19	85	33	65	71
Degree	41	13	51	20	15	6	36	39

* Low dosage included participants who received dosage less than the median number of minutes; high dosage included participants who received equal to or more than the median number of treatment by minutes.

Research Question

Profiles of participants who attained and who did not attain their high school degree or equivalent were compared with a focus on symptoms of depression, parental distress, social support, perceptions about substance use, gender role beliefs, and acculturation. In order to address this question, researchers intended to examine discriminant function analyses comparing participants who obtained their degree with participants to did not earn a degree. However, preliminary MANOVA results revealed limited significant variables and subsequently, discriminant function analyses were only performed at the 6-month and the 36-month data collection point.

Participants at the 6-month data collection point reported a significant difference with belief of riskiness of substance use and a significant difference in gender role beliefs as shown in MANOVA results that included measuring symptoms of depression, parental distress, peer and adult social support, perceptions about substance use, and acculturation. MANOVA results at the 6-month data collection point indicated that participants who obtained their degree reported significantly higher scores of riskiness of substance use (M = 3.73, SD = .46) than participants who did not obtain their degree (M = 3.40, SD = .59), $F(1,244) = 7.35$, $p < .01$. In addition, participants who obtained their degree also reported significantly lower traditional gender role beliefs (M = 1.90, SD = .55) than participants without a degree (M = 2.19, SD = .72), $F(1,244) = 4.07$, $p < .05$.

Approximately 84% (n = 253) of participants in the sample were available to perform the discriminant function analysis at the 6-month data collection point. Interpretation of the results revealed one significant function, $\Lambda = .95$, $\chi^2(2, 253) = 11.91$, $p < .003$, which indicated the predictors were able to differentiate between participants who earned a degree and those who did not. Based on canonical correlation, a moderate proportion (i.e., 22%) of the variance was explained by degree status.

An assessment of the standardized function coefficients revealed that scores on attitude toward riskiness of substance use was strongly associated with degree status while gender role beliefs was moderately associated with degree status. Specifically, participants who obtained their degree reported substance use to be more risky and

held lower traditional gender role beliefs than participants who did not earn their degree. Table 15 displays standardized and structure coefficients for the predictor variables.

Table 15

Standardized Coefficients and Structure Coefficients for Participants at 6 Months

Predictor variable	Standardized function coefficients	Structure coefficients with discriminant function
Gender role	.81	.83
Riskiness of substance use	-.56	-.59

Note. N = 253

The group centroid for participants with a degree was .62 while the group centroid for participants without a degree was -.08. Based on the classification table, 42% of degree-obtaining participants were classified correctly as were 58% of nondegree-obtaining participants. Overall, 60% of participants were correctly predicted into their respective degree-obtaining status. The classification table for participants at the 6-month data collection point is displayed in Table 16.

Table 16

Classification Analysis for Degree Status among Participants at the 6-Months

		Predicted group membership			
		Degree		No degree	
Actual membership	*n*	*n*	%	*n*	%
Degree	28	21	75	7	25
No degree	227	95	42	132	58

Note. Overall percentage of correctly classified cases is 58%.

At the 12-month data collection point, participants reported a significant difference with adult social support as shown in MANOVA results that included

measuring the same symptoms as the previous MANOVA analysis (i.e., symptoms of depression, parental distress, peer and adult social support, perceptions about substance use, gender role, and acculturation). MANOVA results indicated that participants who obtained their degree reported significantly higher adult social support (M = 3.78, SD = .31) than participants who did not earn their degree (M = 3.58, SD = .65), $F(1,219) = 4.03$, $p < .05$.

At the 18-month data collection point, MANOVA results indicated that participants who reported fewer symptoms of depression (M = 1.79, SD = .56) were more likely to receive their degree when compared to participants with higher levels of depressive symptoms (M = 2.03, SD = .63), $F(1,206) = 6.40$, $p < .01$. Participants who earned their degree by the 24-month data collection point reported significantly lower gender role beliefs (M = 1.99, SD = .72) than participants without a degree (M = 2.29, SD = .71), $F(1,176) = 7.80$, $p < .01$. Similar results were also found at 30 months, $F(1,198) = 9.76$, $p < .01$, 42 months, $F(1,169) = 10.29$, $p < .01$, and at 48 months, $F(1,150) = 7.99$, $p < .01$.

At the 36-month data collection point, participants with a degree reported significantly more risk associated with substance use (M = 3.46, SD = .60), although they reported less beliefs that using substances was wrong (M = 3.01, SD = .92) when compared to participants without a degree (M = 3.24, SD = .76; M = 3.36, SD = .73 respectively). Additionally, participants who earned their degree also reported significantly lower traditional gender role beliefs (M = 2.10, SD = .71) when compared to participants who did not earn their degree (M = 2.42, SD = .72) as shown in MANOVA results. Because significant predictor variables (i.e., wrongness and riskiness of

substance use and gender role) were identified, discrimant function analysis was performed at the 36-month data collection point.

At 36 months, approximately 61% (n = 184) of participants in the sample were available to perform the discriminant function analysis. Results revealed one significant function, $\Lambda = .86$, $\chi^2(3, 184) = 26.87$, $p < .001$, which indicated the predictors were able to adequately differentiate between participants who earned a degree and those who did not. A moderate proportion (i.e., 37%) of the variance was explained by degree status according to canonical correlation.

Scores on attitude toward riskiness of substance use and attitude toward wrongness of substance use were highly associated with degree status while gender role beliefs was moderately associated with degree status according to standardized function coefficients. Specifically, participants who obtained their degree reported substance use to be more risky but less wrong than participants who did not earn their degree. Additionally, participants with their degree reported lower traditional gender role beliefs than participants who did not earn their degree. Table 17 displays standardized and structure coefficients for the predictor variables.

Table 17

Standardized Coefficients and Structure Coefficients for Participants at 36 Months

Predictor variable	Standardized function coefficients	Structure coefficients with discriminant function
Gender role	.52	.58
Riskiness of substance use	-.70	-.37
Wrongness of substance use	.52	.54

Note. $N = 253$

The group centroid for participants with a degree was -.32 while the group centroid for participants without a degree was .50. Based on the classification table, 60% of participants were correctly predicted into their respective degree-obtaining status; 69% of participants with a degree and 65% without a degree. The classification table for participants at the 36-month data collection point is displayed in Table 18.

Table 18

Classification Analysis for Degree Status among Participants at 36 Months

		Predicted group membership			
		Degree		No degree	
Actual membership	*n*	*n*	%	*n*	%
Degree	113	78	69	35	31
No degree	72	25	31	47	65

Note. Overall percentage of correctly classified cases is 68%.

CHAPTER IV

DISCUSSION

The complexity of examining the qualities that can potentially impact degree attainment among teenage mothers is highly challenging. This study examined several areas such as substance use, attitudes toward substance use, symptoms of depression, parental distress, social support, and educational expectations that influence educational attainment among teenage mothers. Substance use and attitudes towards substance use have been linked to decreased educational attainment (e.g., Fortenberry et al., 1997; McCarthy et al., 2002; Swaim et al., 1997). Additionally, psychosocial variables like depression, parental distress (i.e., how distressed an individual becomes about their parenting), peer social support, and adult social support have also been shown to impact educational attainment (Kirby, Lepore, & Ryan, 2005). Furthermore, teenage pregnancy and repeat pregnancy are of particular concern for decreased educational attainment due to its association with degree attainment (Coard et al., 2000; Kershaw et al., 2003; Stevens-Simon et al., 2001). Finally, educational expectations are likely an important facet of educational attainment due to the necessary motivation required to balance the responsibilities of school and motherhood (Klerman, 2004).

Researcher hypothesized that the multidimensional intervention would increase educational attainment among participants assigned to the treatment groups. Additionally, it was hypothesized that the more treatment participants received, the more likely they would be to attain more education. Finally, it was predicted that the various psychosocial variables would be associated with the amount of services participants would receive; specifically that increased services would be associated with

higher educational expectations, higher levels of social support, and lower levels of parental distress and depressive symptoms. In order to address these hypotheses, relationships among the various psychosocial variables as well as changes in these variables over time were examined.

Relationships among Psychosocial Variables

Results indicated several relationships between the psychosocial variables during the initial survey. Participants who reported high educational expectations also reported high levels of peer support and high levels of perceived risk associated with substance use. These participants also reported low levels of depressive symptoms and less traditional gender role beliefs. Participants with high levels of depressive symptoms indicated high levels of parental distress and low levels of peer and adult support. Additionally, participants with high parental distress also indicated low levels of peer support and adult support.

Regarding substance use, participants who reported a high level of perceived risk involved in use also reported high levels of perceived wrongness in use. Additionally, these participants reported higher levels of adult social support than reported by participants who perceived substance use as less risky. Moreover, those who tended to use one substance tended to use a variety of substances.

Results reflecting the numerous relationships among these psychosocial variables support findings that these issues are complexly related. These relationships likely fluctuate over time, as indicated by analyses. Changes in perception of risk in using substances and educational expectations will naturally change as participants grow older and potentially obtain a degree. Additionally, subjective ratings of distress

and depression are sensitive to psychosocial changes such as relationship status, support from others, repeat pregnancy, child's age, etc.

Specifically focusing on educational expectations among teenage mothers, it seems logical that participants who planned on earning their degree would experience fewer barriers such as lower levels of depression when compared to participants with lower educational expectations. Additionally, they would likely perceive more assets such as support from peers, view substance use as risky, and hold non-traditional gender role beliefs. The reverse also seems likely; participants with several barriers to education such as high levels of depression and parental distress along with traditional gender role beliefs and a view of substance use as minimally harmful will likely not have high expectations for their educational attainment (Kirby et al., 2005; Klerman, 2004).

Impact of Treatment on Psychosocial Variables

Results examining the changes in psychosocial variables among participants as well as comparing the two treatment groups and the control group provided some significant results with substantial clinical interest. Participants reported general decreases in parental distress over time throughout the study, although there were fluctuations at different data collection points between the groups. This decline in distress may indicate several occurrences. There is evidence (i.e., Hawthorne Effect) that any type of contact with researchers, even if it is just contact with the surveyor every six months, may have helped provide participants with a sense of importance, leading to a decrease in parental distress. It is also reasonable to surmise that as these teenage mothers acquired more experience with parenting, their level of distress decreased, explaining the lack of differences between treatment groups. In addition to

parenting experience, a natural maturity effect may have helped decrease participants' levels of parental distress; as participants grew older, they may have acquired more effective skills to cope with stress. Finally, it is also possible that community resources and overlap in participants' social networks leading to a transmission of information may have lessoned differences between treatment groups and the control group.

Participants also reported decreased levels of symptoms of depression over time for the first two years of the study, despite their assigned treatment group. However, during the following two years, symptoms increased enough to minimize significant differences found at previous data collection points as well as to create a general increase in depressive symptoms over the entire length of the study. Participants in the different treatment groups did not report significantly different levels of symptoms over the course of the study; therefore, it can be inferred that the different types of treatment did not impact symptoms of depression significantly. However, interactions with researchers, even if minimum contact only included survey administration every six months, could have provided a perception of assistance aiding in decreasing symptoms. Also, community resources and information overlap due to social networks may have contributed to the similarities between the groups. Additionally, saliency may account for decreases in symptoms during the first two years, meaning that participants who are willing to take an active role in a study may feel they are contributing to their mental health care early in the study and continued participation decreases the saliency of the effect.

In regards to the general increase of symptoms of depression over time as well as the fluctuation of symptoms between time periods, this finding may reflect the

vacillating nature of symptoms of depression. Symptoms of depression tend to oscillate throughout a lifetime and are sensitive to situational stress, chronic sadness, and physical changes such as pregnancy. Therefore, these findings may signify the natural course of symptoms rather than an impact of the intervention.

Similar trends were seen in substance use and perceived wrongness of substance use. The use of substances declined over time for the first two years of the study, and then reported substance use increased. Additionally, the perception of substance use being wrong decreased over time. Treatment group differences were not found among these results indicating that despite type of treatment, participants tended to decrease substance use during the first two years of the study and then increase substance use while perceiving less wrongness in use. Again, this decline over two years and then subsequent increase may be related to interactions with researchers and saliency, as predicted with symptoms of depression and parental distress. Additionally, age is likely a important factor in participants perceiving substance use as wrong considering most participants reached the legal age limits to use tobacco and alcohol during enrollment of the study.

Educational Attainment

Participants' educational attainment was examined in several ways, assessing enrollment as well as earning a degree. Interestingly and contradictory to the proposed hypothesis that increased treatment would be associated with educational attainment, participants who received less treatment tended to have higher grade completion.

Grade Completion

Grade completion appeared to be the area most affected by the treatment intervention provided in the study. During the first year and a half of the study, significant differences were found when measuring grade completion, indicating that participants who received treatment, particularly case management, were more likely to complete higher grades in school (e.g., 10th, 11th, and 12th) when compared to the control group. Although levels of depression, peer support, perceived risk of substance use, traditional gender role beliefs, and pregnancy impacted enrollment, participants who received case management services were still more likely to stay in school longer after controlling for the impact of the above mentioned variables. This provides further support that case management services have been shown to be highly effective in improving psychosocial outcomes (e.g., Harris & Franklin, 2003; Issel, 2000; Kirby et al., 2005; Laken, 1996; Solomon & Liefeld, 1998).

Participants who received both curriculum and case management services also tended to have (nonsignificant) higher grade-completion rates when compared to participants who received the "standard of care." It is unclear why participants who received case management and not participants who received both treatment interventions would have higher rates of grade completion, especially considering that the case management only group (CM) did not decline curriculum, instead curriculum was not offered during that time. Considering the inexplicability, there may have been an anomaly in when the participants were enrolled in the current study and how much case management was received. However, these results support the concept that individualized case management services help teenage mothers remain in school.

Unfortunately, services do not seem to impact long-term enrollment in school or obtaining a degree after the first portion of the study (as explained in the next section). These findings may indicate that interventions work best during the first two years after pregnancy and are not yet adequately designed to remain substantially effective past the two-year mark. These findings may also reflect that participants who needed the least amount of services or help, benefited the most from the treatment intervention.

Degree Attainment

Case management services also appeared to facilitate obtaining a high school degree during the first year and a half of the study. However, after 18 months, no significant differences were found between participants who received services and those who did not in terms of earning their degree. Again, treatment appears to have the most impact during the beginning of the study, possibly because of saliency or because of maturity effects. It also seems reasonable to surmise that if participants temporarily dropped out of school or took time off of school to have a baby, they may become more discouraged about going back to school and finishing their high school degree with students who are younger than they are. What adds complexity to these findings is that participants who received the most dosage during the first year and a half of the study were participants who had yet to earn a degree. Therefore, participants who were more likely to earn their degree by 18 months had received less curriculum and/or case management at that point than those who did not earn their degree. These findings imply that participants who earned their degree either used interventions more effectively and/or had fewer barriers to educational attainment as shown by the relationship between high educational expectations coinciding with low

levels of depressive symptoms, low levels of gender role beliefs, and high peer social support. Again, these findings may reflect the notion that participants who needed less assistance gained the most from the treatment they received.

Limitations of the Current Study

Although the study included major advancements in the area of multidimensional treatment interventions for teenage mothers, the primary limitation of the current study was that the intervention's focus on educational attainment was secondary. The intervention's primary focus was on decreasing substance use and repeat pregnancy. Although this is much needed among teenage mothers, there is evidence that high educational expectations and high levels of social support regarding educational attainment are also effective ways to impact teenage pregnancy, repeat pregnancy, and substance use (Kirby et al., 2005). As with many longitudinal studies examining complex relationships between multiple constructs, researchers must balance the length of the surveys with retaining participants who need interventions most. Therefore, items in the survey were relatively limited in detail as to why a participant did not stay enrolled in school or earn a degree. Considering the discrepant rates of educational attainment among Mexican Americans in the general population, Mexican American teenage mothers would benefit from an intervention that included a primary focus on educational attainment.

Another limitation to the current study relates to case management. Case managers provided a host of different services based on the participants' needs. Although this is most beneficial for participants, it does not lend itself to standardized measurement in terms of the numerous types of treatment topics provided or the quality

of the relationship between case manager and participant. While it is not impossible for case managers to track the topic areas included in services provided, it is improbable to measure accurately the amount of time case managers spend with each participant on each topic or to capture the depth in which the topic is discussed. Additionally, it is also difficult to measure accurately the quality of the relationship between the case manager and the participant, not only in terms of communication and relatedness but also in terms of cultural connectedness. Case managers tended to be Hispanic; however, they may have had a very different level of acculturation when compared to their assigned participants creating added complexity when measuring the quality of the relationship. In summary, although case management services have been shown in the literature to be an effective intervention strategy (e.g., Harris & Franklin, 2003; Issel, 2000; Kirby et al., 2005; Laken, 1996; Solomon & Liefeld, 1998), these services and their impact on participant behavior are difficult to measure.

Final limitations in the current study involve measuring culture and acculturation. The items included in the survey created a brief, language-based acculturation scale. Though these types of scales are used often in the literature and are sometimes helpful, acculturation is a multifaceted construct that expands far beyond language. This brief scale used among participants in the current study provided little variance in acculturation. Therefore, conclusions about participants' acculturation status were unattainable. In addition to language, items that ask participants about ethnic identity, adherence to cultural values, preference for media presented in Spanish, and primary culture of peer relationships would provide a more in-depth understanding of participants' areas of acculturation and conflicts about cultural values.

Future Research

There is a serious need for continued research on Mexican American educational attainment due to the discouraging discrepancies in degree attainment between Mexican Americans and other groups. Considering degree attainment discrepancies among Mexican American teenage mothers are even more substantial, research in this area is extremely valuable. In our society, education is an asset that can lead to many opportunities such as employment, financial stability, and independence that are not as accessible to individuals without a high school degree. It is important for the advancement of Mexican Americans, who are now part of the largest minority group in the United States, to gain a better understanding of why they are not as likely to earn a high school degree compared to other racial and ethnic groups. These findings are also important in terms of designing interventions that are directed towards this population while considering unique characteristics associated with the Mexican American culture.

In addition to uncovering reasons for the discrepancy in educational attainment rates between Mexican Americans and other groups, it is also important to examine cultural values that may impact receiving treatment and subsequently earning a degree. Treatment interventions for Mexican Americans need to take into account factors such as level of acculturation, collectivism, family involvement, and the individuals' family identity in order to make interventions most effective. For example, an individual who values helping provide for her family is not likely to respond to an intervention that promotes education in order to better yourself and increase autonomy. Instead, the benefits of an individual helping to financially assist the family and become skilled at

problem-solving and parenting strategies through increased education may be a more valuable approach when designing interventions.

Continued research on the efficacy of multidimensional interventions such as the one implemented in this study is also of particular importance considering the ongoing rates of pregnancy and substance use among teenagers that impact educational attainment. Although few significant differences were found between treatment groups and the control group in the current study after 24 months, results do not undermine the benefit to having an adequate control group. Instead, it likely supports the impact that the intervention had on functioning; intervention likely helped participants increase their educational attainment at a faster pace and the control group took 18 to 24 months to approach the same levels of educational success. In terms of financial implications, this leads to individuals' who are provided case management support potentially working one to two years earlier providing financial support to their family.

Another reason for the small number of differences shown between the treatment and control group may revolve around the concept of the "standard of care." It could be the case that the “standard of care” in this area of South Texas provides enough assistance to mask the effects of the multidimensional intervention. Future researchers studying multidimensional interventions may benefit from using control groups where the “standard of care” includes fewer services than those provided to the control group used in the current study.

Recommendations for future research examining educational attainment include having a multidimensional intervention that contains educational advancement as a primary focus. Perhaps this type of design would more accurately measure whether the

intervention improves degree attainment. In addition, more in-depth assessments of acculturation are needed when examining educational attainment rates of Mexican Americans. This area is critical due to the complexities of cultural identity and the impact cultural values have on receiving an education while also parenting.

APPENDIX

Table A.1

Survey Attrition Rates by Treatment Group

	Data Collection Point																	
	Baseline		6		12		18		24		30		36		42		48	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
Control	128	-	108	16	105	18	97	24	79	38	95	36	88	31	75	41	69	46
CM&C	102	-	91	11	79	23	68	33	68	33	74	37	70	31	68	33	64	37
CM	72	-	56	22	47	35	45	38	42	42	42	42	40	44	41	43	37	49
Total	302	-	255	16	231	24	210	30	189	37	211	30	198	33	184	39	170	44

Table A.2

Pearson Correlations

		Educational Expectations	Symptoms of Depression	Parental Distress	Peer Support	Adult Support	Gender Role	Perceived Wrongness	Perceived Riskiness	Cigarette Use	Alcohol Use
Symptoms of Depression	Pearson Correlation	-.17**									
	N	296									
Parental Distress	Pearson Correlation	-.08	.44**								
	N	173	176								
Peer Support	Pearson Correlation	.15*	-.29**	-.24**							
	N	295	301	176							
Adult Support	Pearson Correlation	.03	-.23**	-.17*	.35**						
	N	296	302	176	301						
Gender Role	Pearson Correlation	-.15**	.09	.14	-.04	.12*					
	N	294	299	174	298	299					
Perceived Wrongness	Pearson Correlation	.10	-.08	-.16*	.05	.08	.06				
	N	296	302	176	301	302	299				
Perceived Riskiness	Pearson Correlation	.14*	-.10	-.04	.07	.12*	-.11	.43**			
	N	295	300	176	299	300	298	300			
Cigarette Use	Pearson Correlation	.13*	-.12*	-.16*	-.06	-.06	-.08	-.22**	.06		
	N	296	302	176	301	302	299	302	300		
Alcohol Use	Pearson Correlation	.10	-.08	-.10	-.07	.06	-.02	-.16*	.12*	.28**	
	N	294	300	175	299	300	297	300	298	300	

(table continues)

Table A.2 *(continued).*

Marijuana Use	Pearson Correlation	.14*	.01	-.01	.08	.09	-.05	-.07	.11	.16**	.26**
	N	295	301	175	300	301	298	301	299	301	300

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

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